Figure 1

Figure 2

PRM1   PRM2   PRM3   Tnp2   SOCS-1
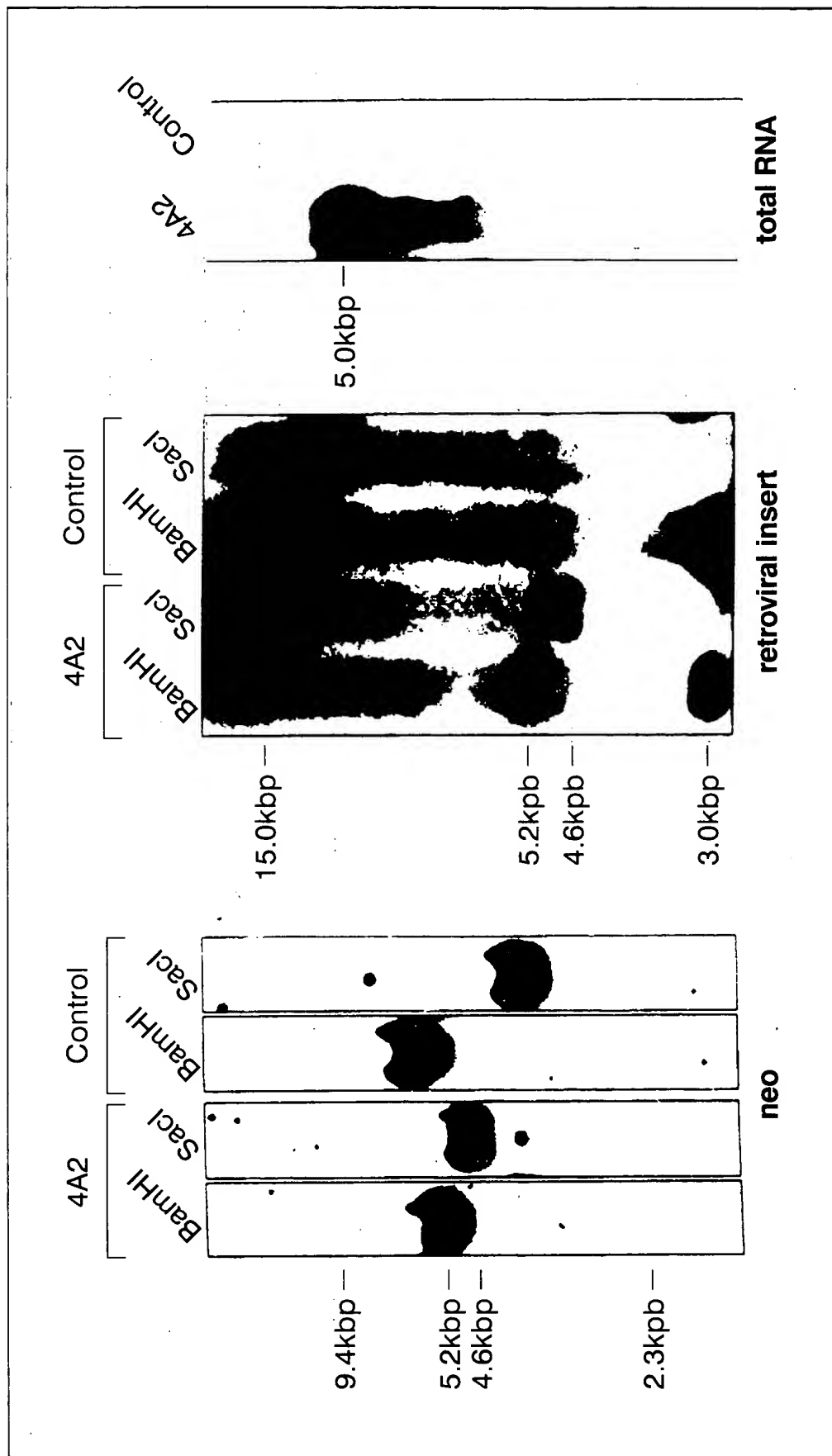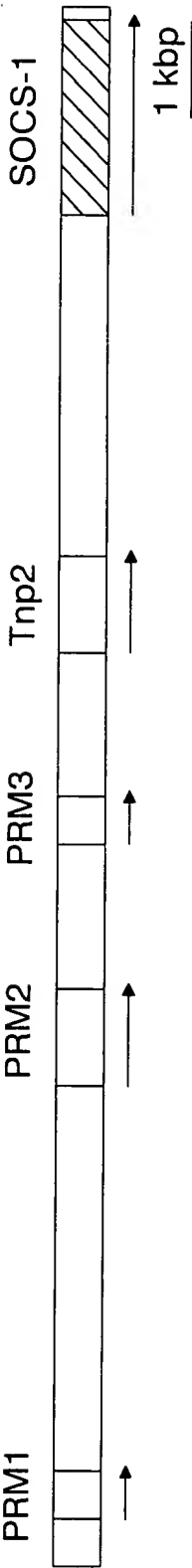
1 kbp

Figure 3A

```
                    cgaggctcaagctccgggcggattctgcgtgccgctctcg
-159
-120    ctccttggggtctgtgttggccggcctgtgccaccggacgcccggctcactgctcctgtct
-60     cccccatcagcgcagcccggacgctatggccaccccctccagtgccccctcgagtagg

  1     ATGGTAGCACGCAACCAGGTGGCAGCCGACAATGCGATCTCCCCGGCAGCAGAGCCCGA
  1     MetValAlaArgAsnGlnValAlaAlaAspAsnAlaIleSerProAlaAlaGluProArg

 61     CGGCGGTCAGAGCCCTCCTCGTCCTCGTCCTTCGTCCTCGCCAGCGGCCCCCGTGCGTCCC
 21     ArgArgSerGluProSerSerSerSerProAlaAlaProValArgPro

121     CGGCCCTGCCCGGCGGTCCCAGCCCCTGGCGACACTCACTTCCGCACCTTCCGC
 41     ArgProCysProAlaValProAlaProGlyAspThrHisPheArgThrPheArg

181     TCCCACTCCGATTACCGGCGCATCACGGGACCAGCGCTCCTGGACGCCTGCGGCTTC
 61     SerHisSerAspTyrArgArgIleThrArgThrSerAlaLeuLeuAspAlaCysGlyPhe

241     TATTGGGGACCCCTGAGCGTGCACGGGGCGCACGAGCGGCTCCTGGACGCCTGCGGCTTC
 81     TyrTrpGlyProLeuSerValHisGlyAlaHisGluArgLeuArgLeuAlaGluProValGly

301     ACCTTCTTGGTGCGCGACAGTCGTCAACGGAACTGCTTCTTCGCGCTCAGCGTGAAGATG
101     ThrPheLeuValAlaArgAspSerArgGlnArgAsnCysPhePheAlaLeuSerValLysMet
```

A ------------------------------------ A

Figure 3B(1)

```
361   GCTTCGGGCCCCACGAGCATCCGGCGTGCACTTCCAGGCCGGCCGCTTCCACTTGGACGGC
121   AlaSerGlyProThrSerIleArgArgValHisPheGlnAlaGlyArgPheHisLeuAspGly

421   AGCCGCGAGACCTTCGACTGCCTTTCGAGCTGCTGGAGCACTACGTGGCGGGCGCCGCGC
141   SerArgGluThrPheAspCysLeuPheGluLeuLeuGluHisTyrValAlaAlaAlaProArg

491   CGCATGTTGGGGGCCCCGCTGCGGCCAGCGCCGCTGCGGCCAGGAGCTGTGCGC
161   ArgMetLeuGlyAlaProLeuArgArgValArgProLeuGlnGluLeuCysArg

541   CAGGCGCATCGTCGTGGCCGCCGTGGGTCGCGGAGAACCTGG  GCGCATCCCTCTTAACCCGGTA
191   GlnArgIleValAlaAlaValGlyArgIleAlaArgIleProLeuAsnProVal

601   CTCCGTGACTACCTGAGTTCCTTCCCCTTCCAGATCtgaccggctgccgctgtgccgcag
201   LeuArgAspTyrLeuSerSerPheProPheGluIle*
```

Figure 3B(2)

B

B

```
661  cattaagtgggggcgcccttattattcttattattaattattatttttctggaacca
721  cgtgggagccctccccgccctgggtcggaggagtggttgtggaggtgagatgcctcccca
781  cttctggctggagacctcatcccacctctcaggggtgggggtgctccccctcctggtgctc
841  cctccgggtcccccctggttgtagcagcttgtctgtgtctggggccaggacctgaattccactc
901  ctacctctccatgtgtttacatattcccagtatcttttgcacaaaccaggggtcgggggaggggt
961  ctctgcttcattttctgctgtgcagaatatcctatttttatatttttacagccagttta
1021 ggtaataacttttattatgaaagttttttttaaaagaaaaaaaaaaaaaaaa
```
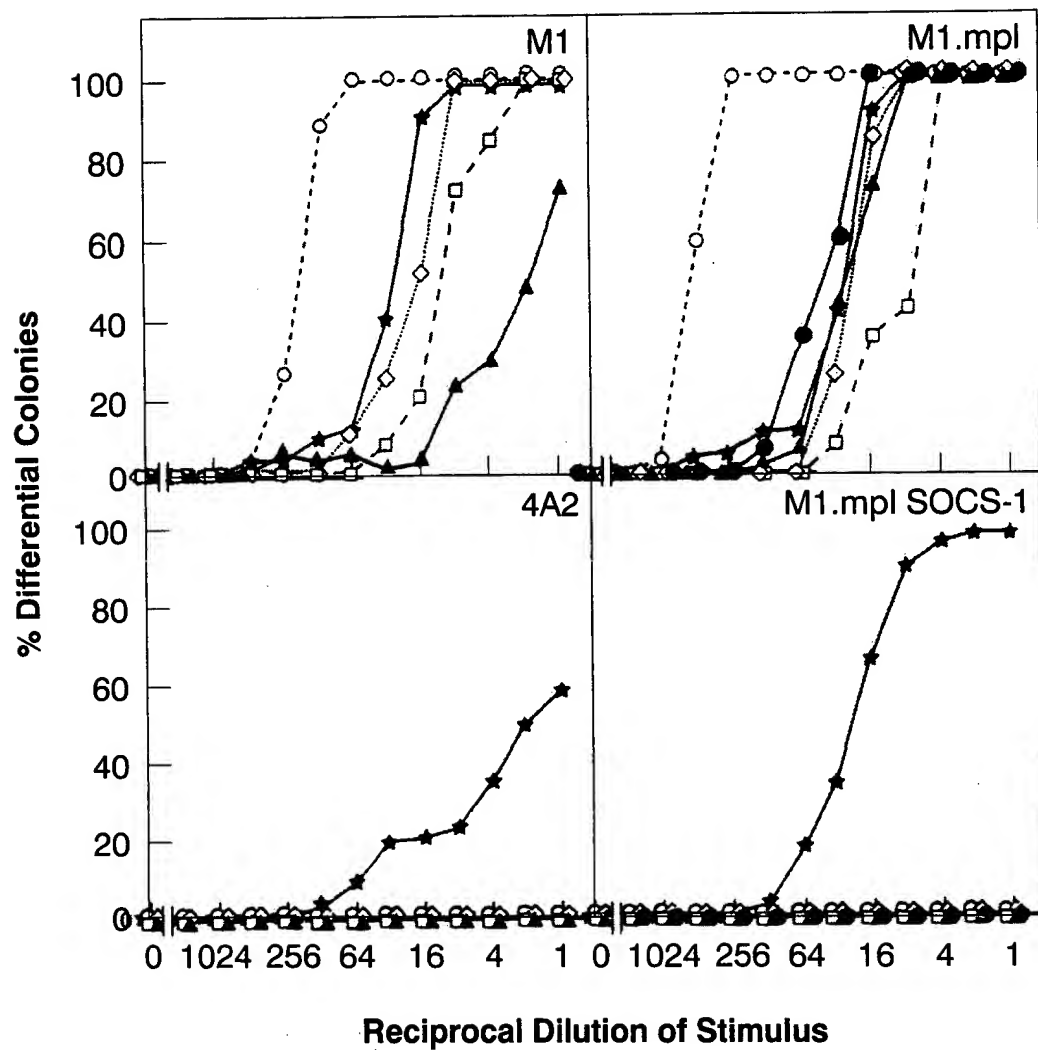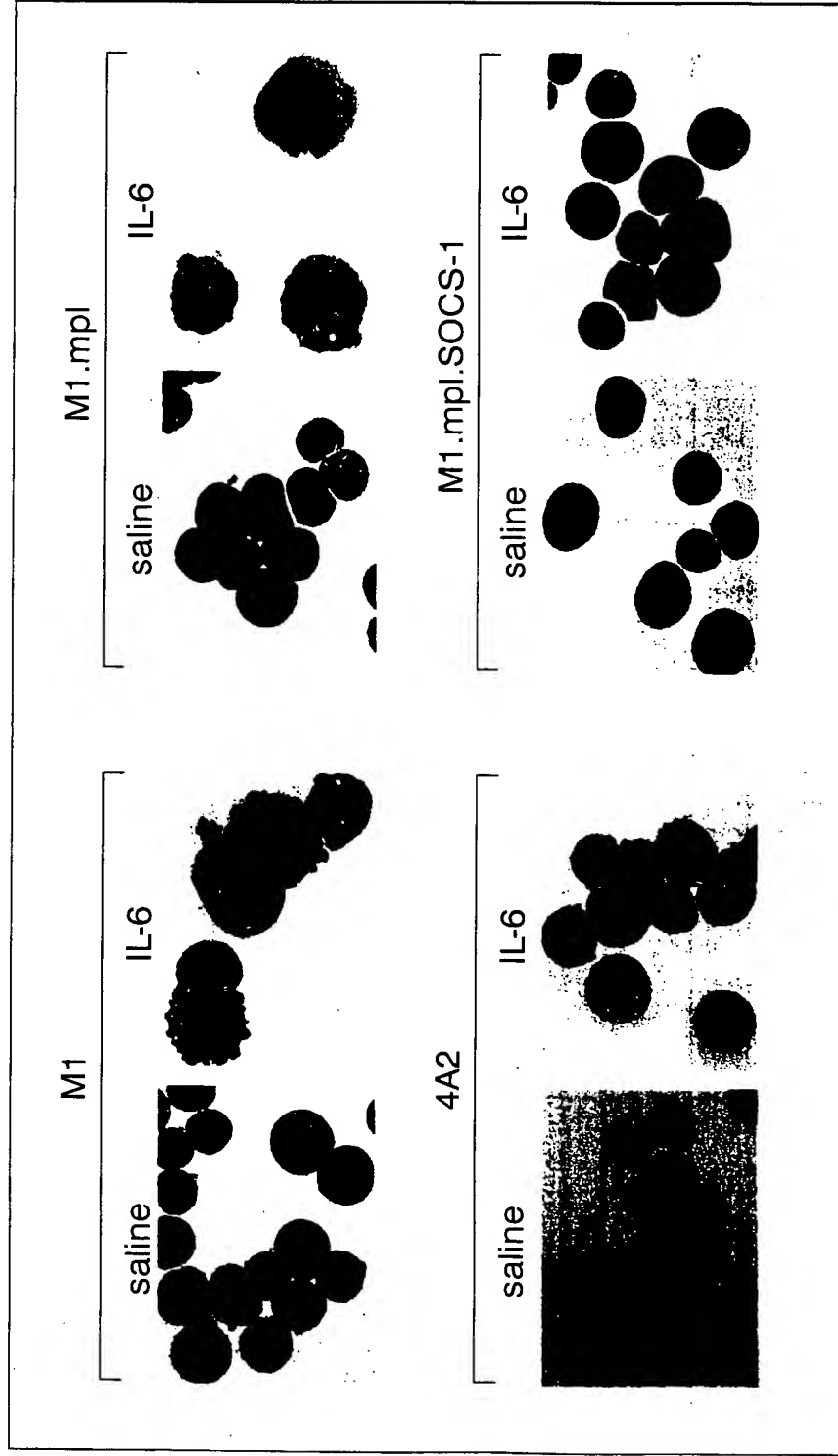
Figure 3B(3)

Figure 4

Figure 5
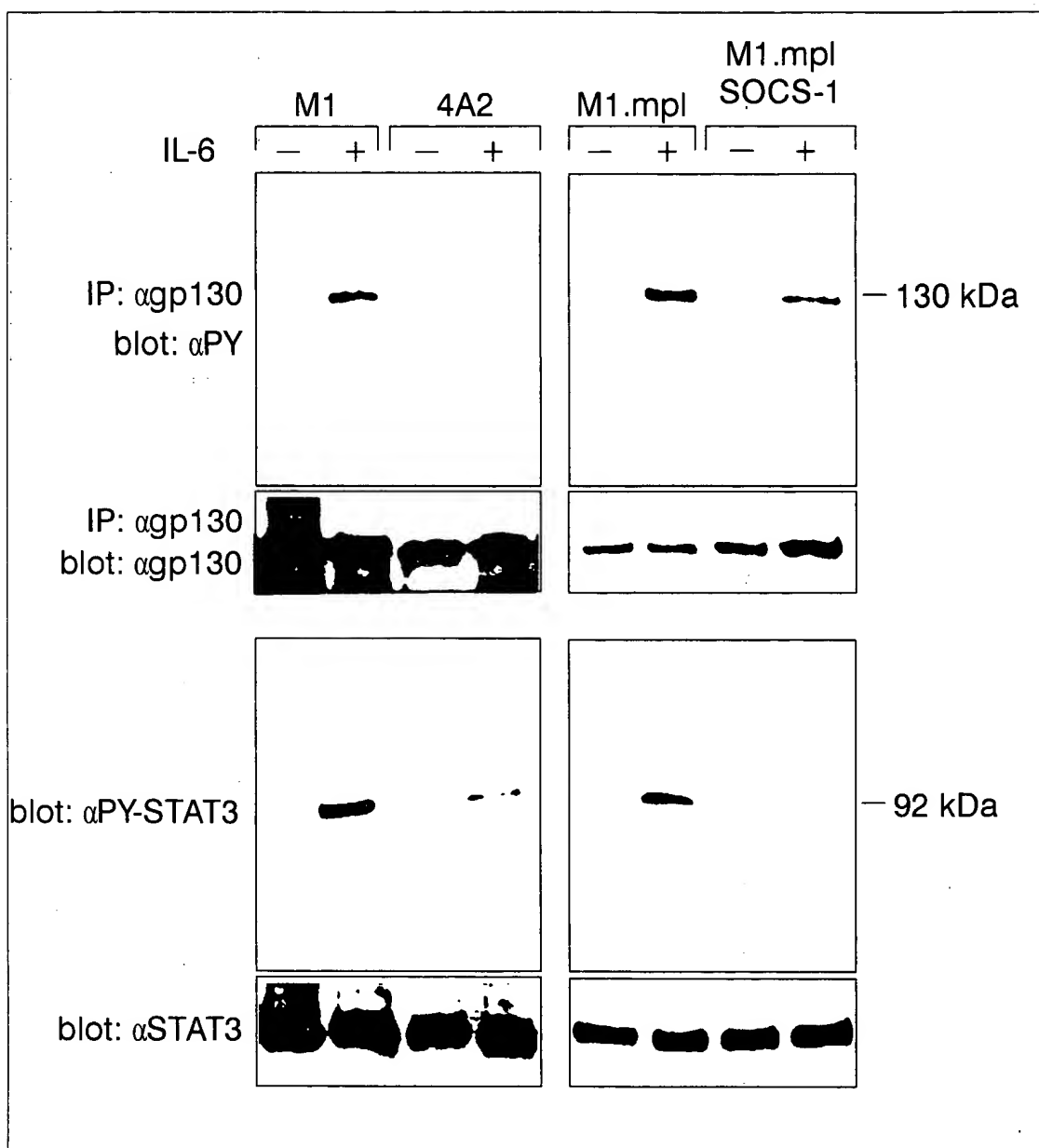
Figure 6
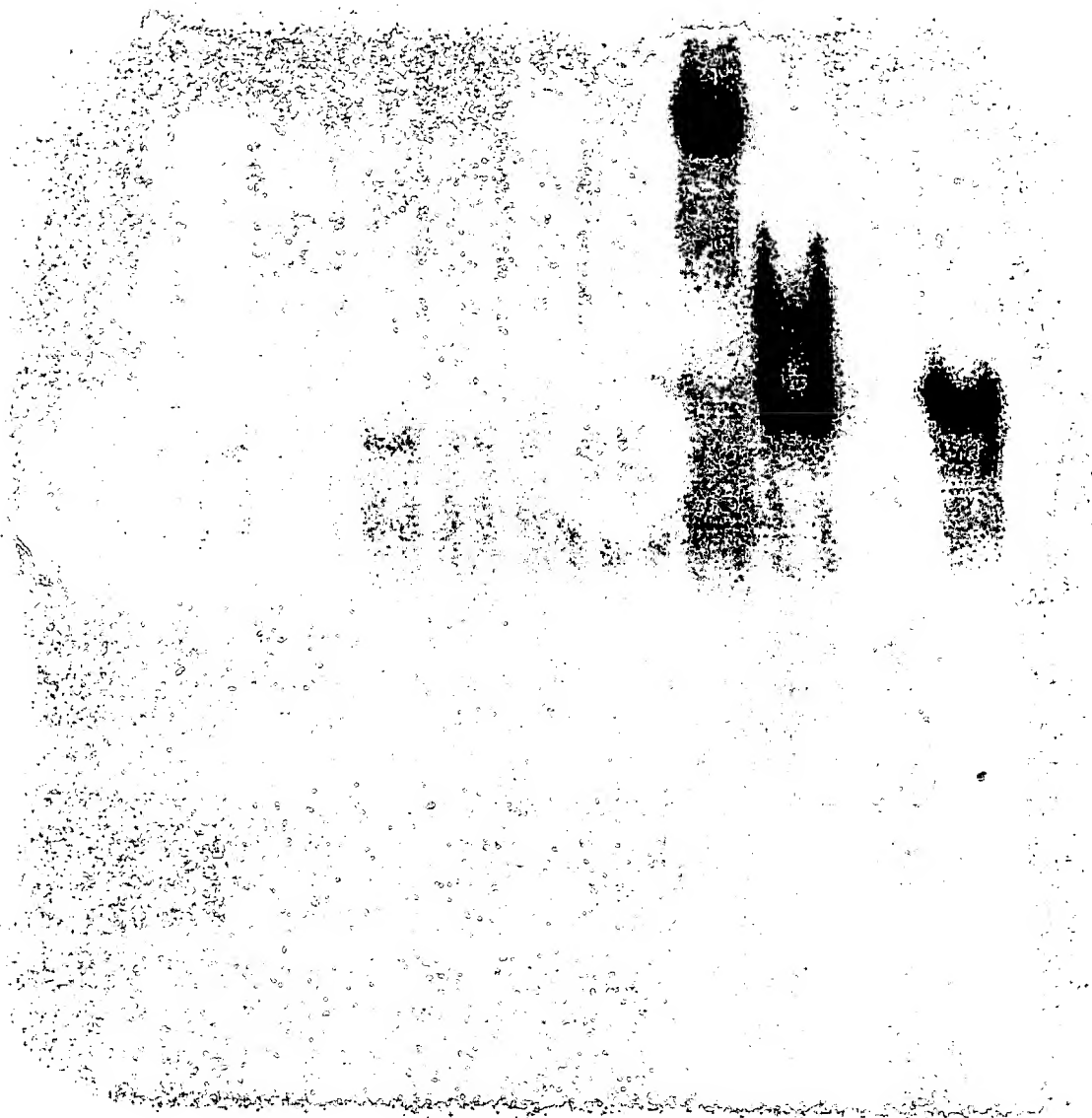
Figure 7A

Figure 7B

Figure 8

```
hsSOCS.1   (1)                    MVAHNQVAADNAVSTAAEPRRRPEPSSSSSS.PAAPARPRPCPAVPAPA   (49)
rrSOCS.1   (1)                    MVABNQVEADNAISPASEPRRRPEPSSSSSSSPAAPARPRPCPVVPAPA   (50)
mmSOCS.1   (1)                    MVARNQVAADNALSPAAEPRRRSEPSSSSSSSPAAPVRPRPCPAVPAPA   (50)
mmSOCS.2   (1)                    MTLRCLEPSGNGADRTRSQWGTAGLPEEQSPEA.............     (33)
mmSOCS.3   (1)                    MVTHSKFPAAGMSR..................                   (14)
mmCIS      (1)                    MVLCVQGSCPLAVEQIGRRPLWAQSLELPGPAMQPLPTGAFPEEVTEET  (50)

hsSOCS.1  (50)   PGDTHF...RTFRSHADYRRITRASALLDACGFYWGPLSVHGAHERLRAEP   (97)
rrSOCS.1  (51)   PGDTHF...RTFRSHSDYRRITRSALLDACGFYWGPLSVHGAHERLRSEP   (98)
mmSOCS.1  (51)   PGDTHF...RTFRSHSDYRRITRTSALLDACGFYWGPLSVHGAHERLRAEP  (98)
mmSOCS.2  (34)   ......ARLAKALRELSQTGWYWGSMTVNEAKEKLKEAP              (66)
mmSOCS.3  (15)   PLDTSLRLKTFSSKSEYQLVVHAVRKLQESGFYWSAVTGGEANLLSAEP   (64)
mmCIS     (51)   PVQAENEPKVLDPEGDLLCLAKTFSYLRESGWYWGSTASEARQHLQKMR   (100)
```

Figure 9(I)

A

A

hsSOCS.1	(98)	VGTFLVRDSRQRNCFFALSVKMASGPTSIRVHFQAGRFHLD......GSR	(141)
rrSOCS.1	(99)	VGTFLVRDSRQRNCFFALSVKMASGPTSIRVHFQAGRFHLD......GNR	(142)
mmSOCS.1	(99)	VGTFLVRDSRQRNCFFALSVKMASGPTSIRVHFQAGRFHLD......GSR	(142)
mmSOCS.2	(67)	EGTFLIRDSSHSDYLLTISVKTSAGPTNLRIEYQDGKFRLDSIICVKSKL	(116)
mmSOCS.3	(65)	AGTFLIROSSDQRHFFLSVKTQSGTKNLRIQCEGGSFSLQSDPRSTQPV	(117)
mmCIS	(101)	EGTFLVRDSTHPSYLFTLSVKTTRGPTNVRIEYADSSFRLDSNCLSRPRI	(150)

hsSOCS.1	(142)	ESFDCLFELLEHYVAAPRRMLGAP..................	(165)
rrSOCS.1	(143)	ETFDCLFELLEHYVAAPRRMLGAP..................	(166)
mmSOCS.1	(143)	ETFDCLFELLEHYVAAPRRMLGAP..................	(166)
mmSOCS.2	(117)	KQFDSVHLIDYYVQMCKQKRTGP...................	(140)
mmSOCS.3	(115)	PREDCVLKLVHHYMPPPGTPSFSLPPTEPSSEVPEQPPAQALPGSTPKRA	(164)
mmCIS	(151)	LAEPDVVSLVQHYVASCAADTRSDSPDPAPTPALPMSKQDAPSDSVLPIP	(200)

B

B

Figure 9(II)

B — — — — — — — — — — B

```
hsSOCS.1  (166) .......... LRQRRVRPLQELCRQRIVATVGR.ENLARIPLNP           (198)
rrSOCS.1  (167) .......... LRQRRVRPLQELCRQRIVAAVGR.ENLARIPLNP           (199)
mmSOCS.1  (167) .......... LRQRRVRPLQELCRQRIVAAVGR.ENLARIPLNP           (199)
mmSOCS.2  (141) ..EAPRNGTVHLYLTKPLYTSAPTLQHFCRLAINKCTGT...IWGLPLPT (185)
mmSOCS.3  (165) YYIYSGGEKIPLEVLSRPLSSNVATLQHLCRKTVNGHLDSYEKVTQLPGP. (213)
mmCIS     (201) ...VATAVHLKLEVQPFVRRSSARSLQHLCRLVINRLVAD...VDCLPLPR (244)


hsSOCS.1  (199) VLRDYLSSFPFQI (211)
rrSOCS.1  (200) VLRDYLSSFPFQI (212)
mmSOCS.1  (200) VLRDYLSSFPFQI (212)
mmSOCS.2  (186) RLKDYLEEYKFQV (198)
mmSOCS.3  (214) .IREFLDQYDAPL (225)
mmCIS     (245) RMADVLRQYDFQL (257)
```

Figure 9(III)
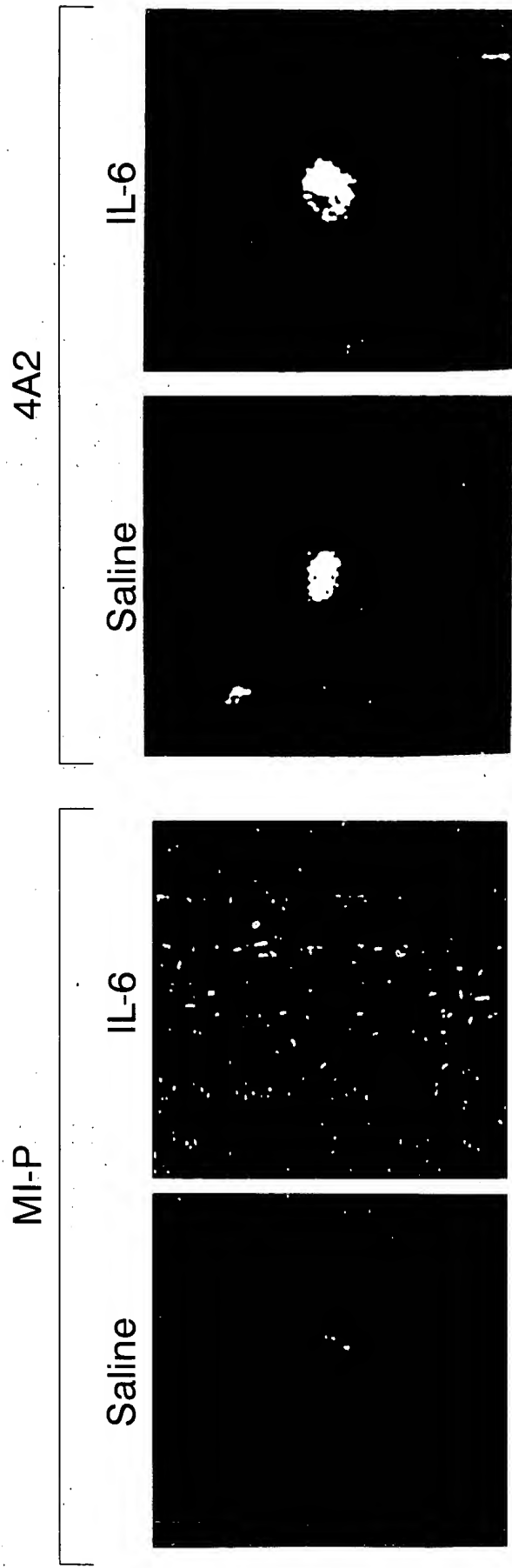
Figure 10
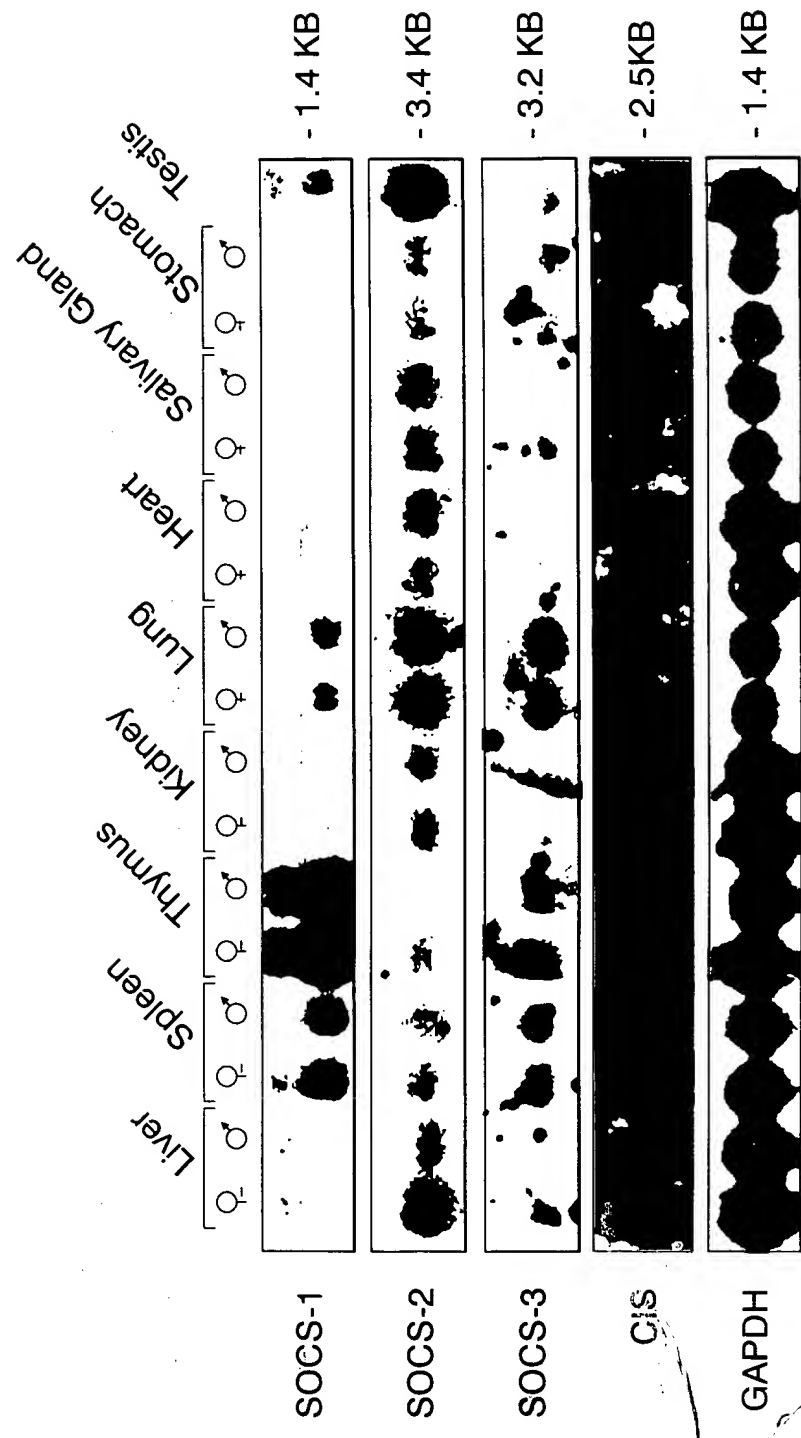
Figure 11A
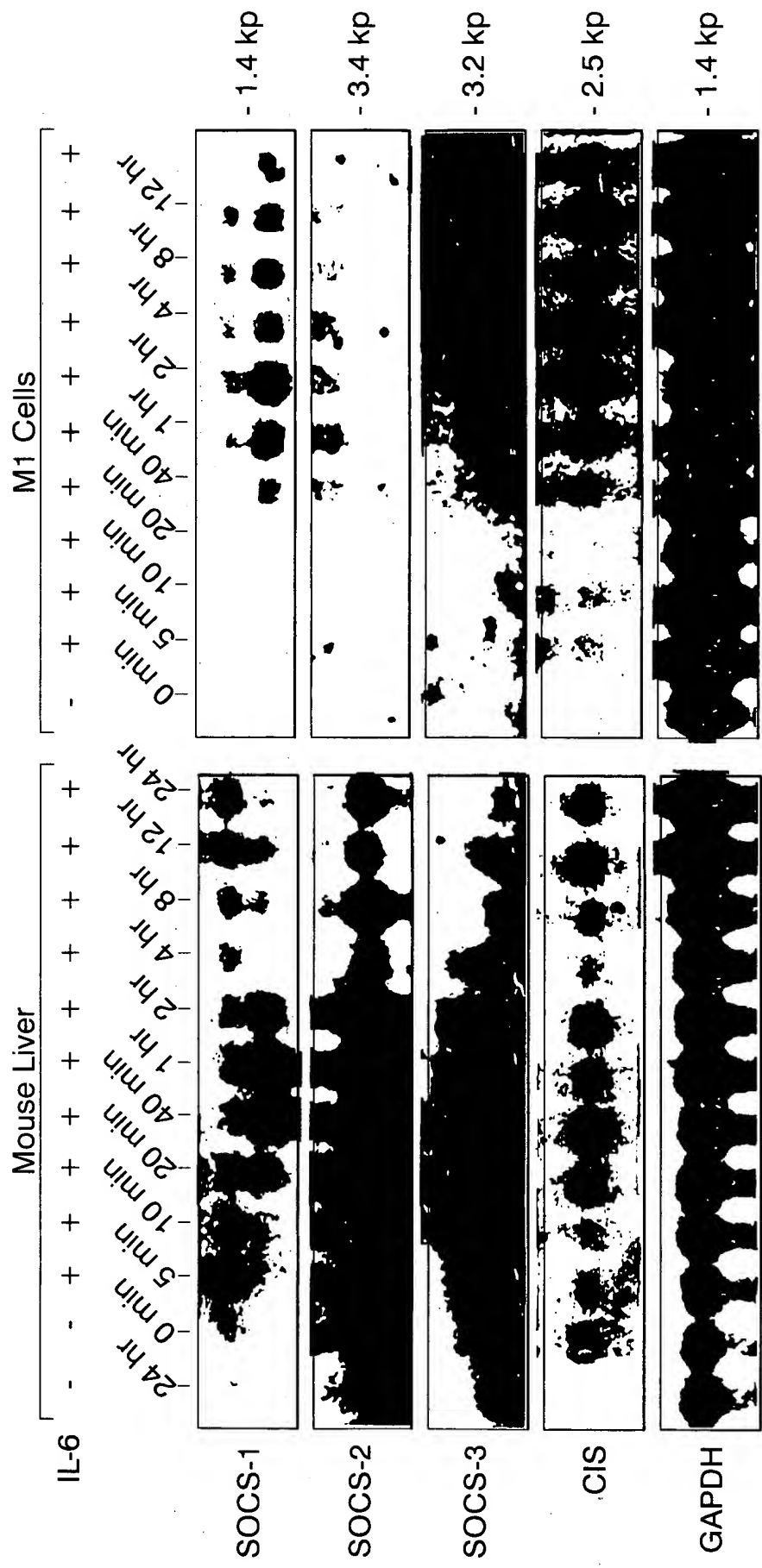
Figure 11B

Figure 11C

Figure 12A

Figure 12B

FIG. 13 A (i)

```
mmSOCS-1    SH2   RPCPAVPAPA
mmSOCS-3    SH2   . . . . . . .
mmSOCS-2    SH2   . . . . . . .
mmCIS       SH2   . . . . . . .
mmSOCS-5    SH2   KEKSISLGEAAPQQESSPLRENVALQLGLSPSKTFSRRNQNCA
mmSOCS-14   WD    GSGRASLPRLSERRVMAVVMAAGARTAPLELSSERSVQKVPRR
mmSOCS-4    WD
mmSOCS-6    WD
mmSOCS-15   WD

mSOCS-5     SH2   KIKHSCSTKTQSSLDTEKKFGMTRSGLQRRRYGSSMQDMDS
SOCS-14     SH2   SRSADRKDGYVWSGKKLSWSKKSESCSESEAIGTWEIPLR

mSOCS-5     SH2   KIKHLSELMLEKCPFPAGSDLAQKWHIKQHTAPVSPHS
SOCS-14     SH2   PIKNCSGRHSPGLPSKRKIHSELMDKCPFPRDLAFRWRF

mSOCS-5     SH2   HTFEATADVNPLYKGPKLAPGMTEISGDGSAPQXNCB
SOCS-14     SH2   CFSHTNGDPCVTANSASCTGGHTGSMMNLVTNNSEDSDMB

mSOCS-5     SH2   DYIHCLVPDLLQITGHP
SOCS-14     SH2   DYVHCLVPDLLQLSNHP
```

FIG. 13 A (iii)

```
                Y F H   T              o            T    D          T
              G W Y o G o S       o E b a l       G S F L O R E S    o S o

CONSENSUS
mSOCS-1    SH2  G F Y W G P L S V H G A H E R L R A E P V G T F L V R D S R Q R N C E A L L S V K
mSOCS-3    SH2  G F Y W S A L T G G E A N L L S A E B A G T F L V R D S S D Q R H F T L S V K
mSOCS-2    SH2  G W Y W G S M T V N E A K E K L K E A P E G T F L V R D S S H S D Y L T L S V K
mCIS       SH2  G M Y W G S I T A S E A R O H L O K M P E G T F L V R D S T H P S Y F T L S V R
mSOCS-5    SH2  P C Y W G V M D R Y E A E L L E G K P E G T F L V R D S A Q E D Y F S V S L R
mSOCS-14   SH2  P C Y W G V M D X Y A A E L L E G K P E G T F L V R D S A Q E D Y F S V S L R
hSOCS-9    SH2  G W Y W G P I T R W E A E G K L A N V P D G S F L V R D S S D D R Y L S C D F B
hSOCS-11   SH2  G W Y W G P M N W E D A E M K L K G K P D G S F L V R D S S D P R Y L S L S E B
```

FIG. 13B (ii)

```
                        R                       T                      E             Y H
                   G    o K o   G   G F S o            F S o      D o o             H Y
CONSENSUS    S H 2  M A S G P T S L R L H F Q A G R F H L D G S R E T F  D C L F E L L E H Y
msOCS.1      S H 2  T Q S G T K N L R L Q C E G G S T L Q S D P R S T Q P V P R F  D C V L K L V H H Y
msOCS.3      S H 2  T S A G P T N L R L E Y Q D G K F R L D S I L C V K S K L K Q F  Q S V V H L L D L Y
msOCS.2      S H 2  T T R G P T N V R L V R L E Y A D S S F R L D S N C L S R P R L L A F P D V V S L V Q H Y
msOCS.5      S H 2  R Y N R S L H A R L E Q W N H N F S F D A H D P C V F H S S  T V T G L L E H Y
msOCS.14     S H 2  R Y S R S L H A R L E Q W N H N F S F D A H D P C V F H S P  D L T G L L E H Y
hSOCS.9      S H 2  S H G K T L H T R L E H S N G R F S F Y E Q X D V E G H T S I V  D L I G A F N Q G L
hSOCS.1-1    S H 2  S Q G I T H H T R M E H Y R G T E S L W C H P K F E D R C Q S V V E F I K R A I M H S
```

FIG. 13 B (ii)

FIG. 13 C (ii)

```
                          K
                          Y N
                          C F R
                          φ W D
CONSENSUS                 A W S Q G Y R I V K L
mmSOCS-4                  A W S Q G H C V V K L
mmSOCS-6

mmSOCS-4      E H V I  D C G D I V W S L A F
mmSOCS-6             D C G Q I  V W G V A F

mmSOCS-4      K I  W D V Y T G K L L L L N L V D
mmSOCS-6      K I  W E V Q T G L  L L L N L S

mmSOCS-4      V W D L K D D G N M V K V L R
mmSOCS-6      I W D L N K H G K Q I Q V L S

mmSOCS-4      L W N M D K Y T M I  R K L E
mmSOCS-6      L W S M R S Y T L I  R K L E

mmSOCS-4      V W D P H N G D L L M E F G H L F P S P T P I F A G
mmSOCS-6      M W D P Y T G A R L R S L H H T Q L E P T M D D S D

mmSOCS-4      F Y R I  D E D C P V Q V A P
mmSOCS-6      I W A . L E L K A P V A F A P

mmSOCS-4      F W A
mmSOCS-6      F W T

mmSOCS-15     G W N

mmSOCS-15     A W E

mmSOCS-13     G W D I  S W P L G R N R L
mmSOCS-15     G W D          I  G R G K L

mmSOCS-13     M X D
mmSOCS-15     G Y S
```

FIG. 13C (iii)

FIG. 13D

```
mSOCS-1    SH2                                    MPPPGTPSFSLPPTEPSSEVPEQPPAQALPGSTPKRAYYI
mSOCS-3    SH2                                                                 VQMCKDKRTGPE
mSOCS-2    SH2    VASCAADTRSDSPDPAPTPALPMSKQDAPSDSVLPIP
mCIS       SH2                                                                         KDP
mSOCS-5    SH2                                                                         KDP
hSOCS-14   SH2
hSOCS-11   SH2          - - - - - -                            CYSRSQLP
mSOCS-4    WD                                              KNGKFLYFLRSRVP
mSOCS-6    WD
mSOCS-13   WD                      GTLSFIVDGQYMGVAFRGLKGKKLYPVVSAV
mSOCS-15   WD                        IGGTYLGPAFRGLKGRTLYPSVSAV
mSOCS-7    ANK    LVKWESLGPEARGRRKMDPEALQVFKEARSI
```

FIG. 13 E (i)

mSOCS:-1	SH 2		V	AAPRR	///MLG////	GAPLR	L	RQRR
mSOCS.-3	SH 2	Y	SGGEKIP	///PLV////	LSRPL	R	SSN
mCIS-2	SH 2	A	PRNGTVH	///LVL////	TKPL	R	TS
mSOCS.-5	SH 2	V	ATAVHLK	///LVQ////	PFVR	R	TF
mSOCS.-14	SH 2	S	SCMFFEP	///LTI////	SLNF	X	XX
hSOCS.-9	SH 2	S	ACMFFEP	///LST////	PLIF	S	N
mSOCS.-11	SH 2	G	SATYLVR	///AKP////	VSRP	R	Q
mSOCS.-4	WD	G	LPPTPVQ	///LLY////	PVSRP	R	V
mSOCS.-6	WD						
mSOCS.-13	WD	W	GHCEIRMRYL	NGL	T	PE
mSOCS.-15	WD	W	GQCQVRIRYMGERR		A	VE
mSOCS.-7	ANK						EE

FIG. 13 E (iii)

FIG. 13 F (ii)

CONSENSUS

CONSENSUS-1	SH2	SSFPFQI*
msocs-3	SH2	DQYQAP*
msocs-2	SH2	EEYKFQV*
mcis	SH2	RQYPFQL*
msocs-5	SH2	KEYHYKQKVRVRWLE
msocs-14	SH2	KEYHYKSKVRLLRIDLKEAQRQFPWRSKRWNPPPRSEGLPAGHHQGHLV*
hsocs-9	SH2	QEKHY*
hsocs-11	SH2	RKFYYYDPQEEVYLS
msocs-4	WD	SYRG*
msocs-6	WD	TYRTF*
msocs-13	WD	LYQ*
msocs-15	WD	LY*
msocs-7	ANK	YE*
msocs-10	ANK	KYENTQ*
msocs-12	ANK	LYEEVLRMNEILEPA
msocs-8	?	QLDFEDLLY*

FIG. 13 F (iii)

Figure 14B

Figure 14B

```
cgaattccgggcggctgtgtgagtctgtgagtggaaggcgcgccggctcttttgtctgagtgtgaccggtggcttttgtt
ccaggcattccggtgattcctccggcagtccgcgagaagcccgagccgccgcgcctctcctgcagtctccacacc
cgggagagcctgagccgcgtcacgcccctcagcccccgctgagtccctctctgttgtcgcgtccgaatcgagttcccg
gaatcagacggtgccccatagATGGCCAGCTTTCCCCCGAGGGTTAACGAGAAAGAGATCGTGAGATCACGTACTATAGG
GGAACTCTTGGCTCCAGCAGCTCCTTTTGACAAGAAATGTGGTGGTGAGAACTGGACGGTTGCTTTTGCTCCTGATGGTT
CCTACTTTGCTGGTGGTCACAAGGATATCGCATAGTGAAGCTTGTCCCGTGGTCCCAGTGCCGTAAGAACTTTCTTTTGCAT
GGTTCCAAAAATGTTACCAATTCAAGCTGTCTAAAAATTGGCAAGACAAAACAGTAATGGTGGTCAGAAAAACAAGCCTCC
TGAGCACGTTATAGACTGTGGAGACATAGTCTGGAGTCTTTGCTTTGGGTCTTCAGTTCCAGAAAAACAGAGTCGTTGCG
TTAATATAGAATGGCATCGGTTCCGATTTGGACAGGATCAGCTACTCCTTGCCACAGGATTAAACAATGGTCGCATCAAA
ATCTGGGATGTATATACAGGAAAACTCCTCCTTAATTTGGTAGACCACCATTGAAAATGGTTAGAGATTTAACTTTTGCTCC
AGATGGGGAGCTTACTCCTTGTATCAGCTTCAAGAGACAAAACTCTAAGAGTGTGGGACCTGAAAGATGATGGAAACATGG
TGAAAGTATTGCGGGCACACATCAGAATTGGGTGtACAGTTGGTGtCATTCTCTCCCGACTGTTCTATGCTGTGTTCAGTGGC
GCCAGTAGTAAAGCAGTTTTCCTTTGGAATATGGATAAAATACACACCATGATTAGGAAGCTGGAAGGTCATCACCATGATGTTGT
AGCTTGTGACTTTTCTCCTGATGGAGCATTGCTAGCTACTGCATCCTATGGCATCCTATGACACTCGTGTGTATGTCTGGGATCCACACA
ATGGAGACCCTTCTGATGGAGTTTGGGCACCTGTTCCCTCCGCCCACTCCAATATTTGCTGGAGGAGCAAATGACCGATGG
GTGAGAGCTGTGTCTTTCAGTCATGATGGACCCTTTGTTGCCAGCCTTGCTGCTGTGTGCCTTTGATGATAAAATGGTGAgGTTCTGGAGAAT
CGATGAGGGATTGTCCGGTACAAGTTGCACCTTTGAGCAATGGTCTTGCCTTTTCTACTGATGGCAGTGTTTAG
CTGCTGGGACACATGATGGAAGTGTATTTTTGGGCCACTCCAAGGCAAGTCCCTAGCCTTCAACATATATGTCGCATG
TCAATCCGAAGAGTGATGTCCACCCAAGAAGTCCAAAAACTGCCTGTTCCTTCCTTCCAAAATATTGGCGTTTCTCCTACCG
CGGTTAGactgaagactgccttctctggtaggcctgccagacagagcgcccttacaagacacacctcaagcttacctc
gtgccgaatt
```

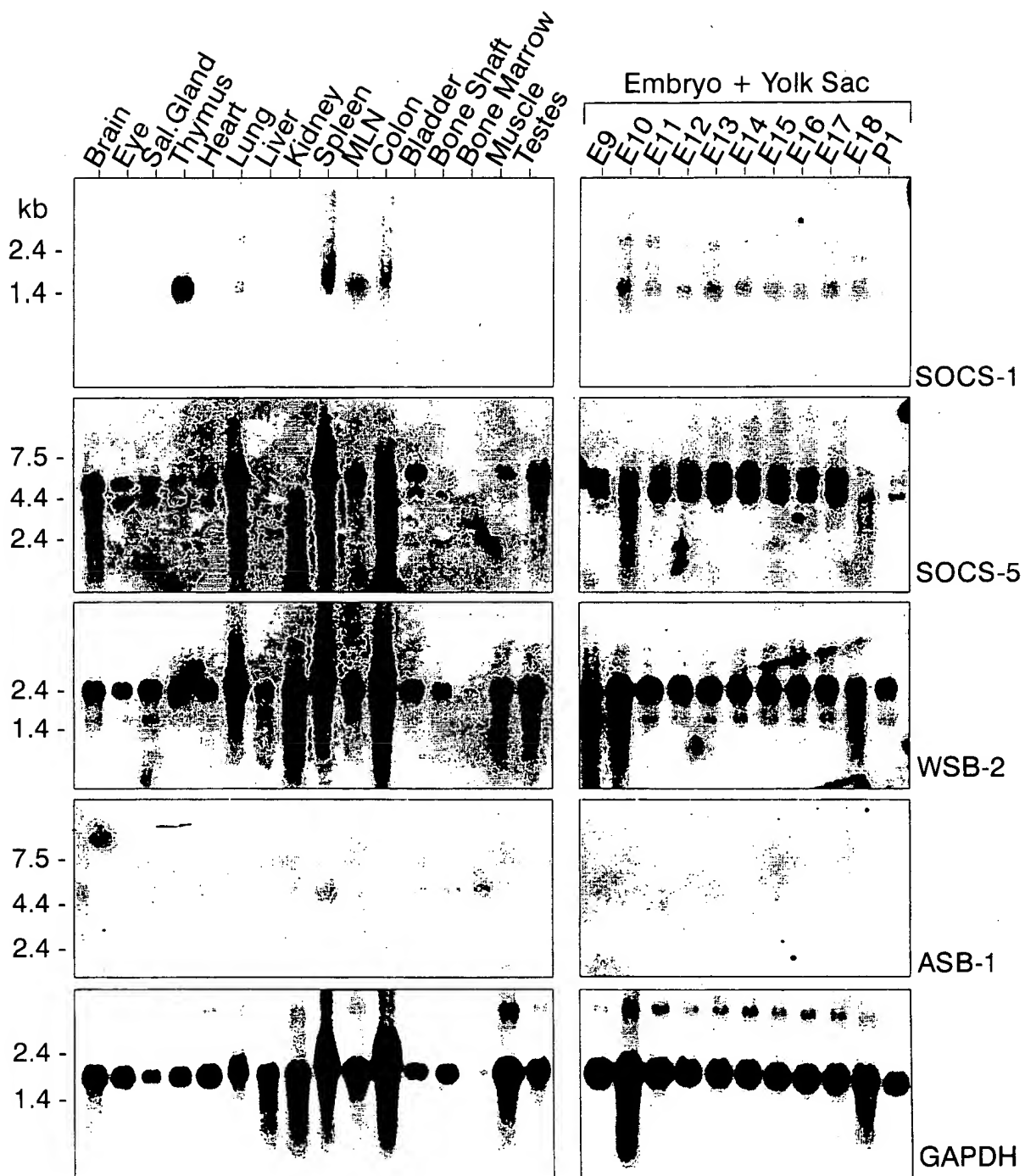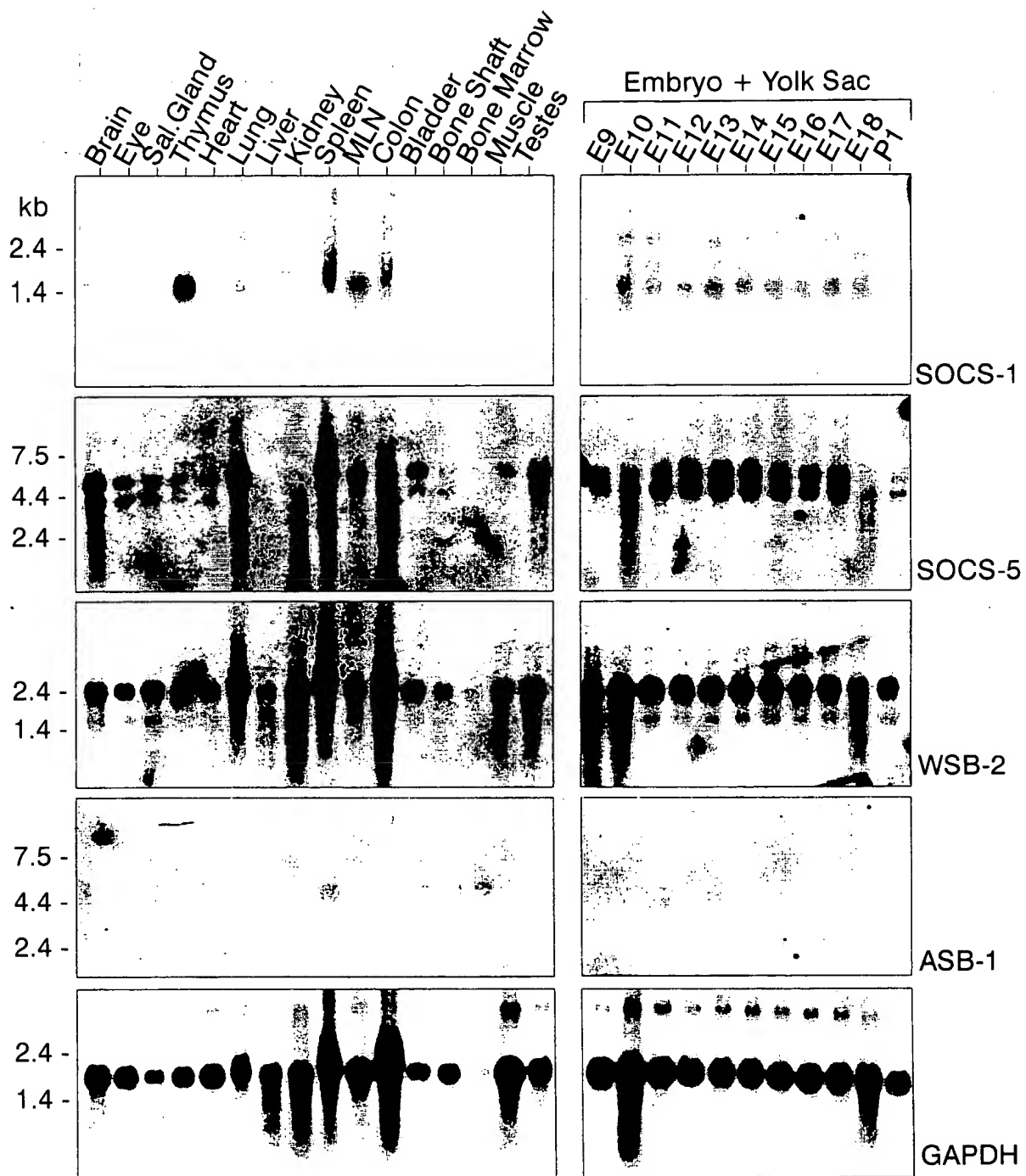## Figure 15

MASFPPRVNEKEIVRSRTIGELLAPAAPFDKKCGGENWTVAFAPDGSYFAWSQGYRIVKLVPWSQCRKNFLLHGSKNVTN
SSCLKLARQNSNGGQKNKPPEHVIDCGDIVWSLAFGSSVPEKQSRCVNIEWHRFRFGQDQLLLATGLNNGRIKIWDVYTG
KLLLNLVDHIEMVRDLTFAPDGSLLLVSASRDKTLRVWDLKDDGNMVKVLRAHQNWVYSCAFSPDCSMLCSVGASKAVFL
WNMDKYTMIRKLEGHHHDVVACDFSPDGALLATASYDTRVYVWDPHNGDLLMEFGHLFPSPTPIFAGGANDRWVRAVSFS
HDGLHVASLADDKMVRFWRIDEDCPVQVAPLSNGLCCAFSTDGSVLAAGTHDGSVYFWATPRQVPSLQHICRMSIRRVMS
TQEVQKLPVPSKILAFLSYRG*

Figure 16

SOCS4

pA

62-1-1

4-4

698bp
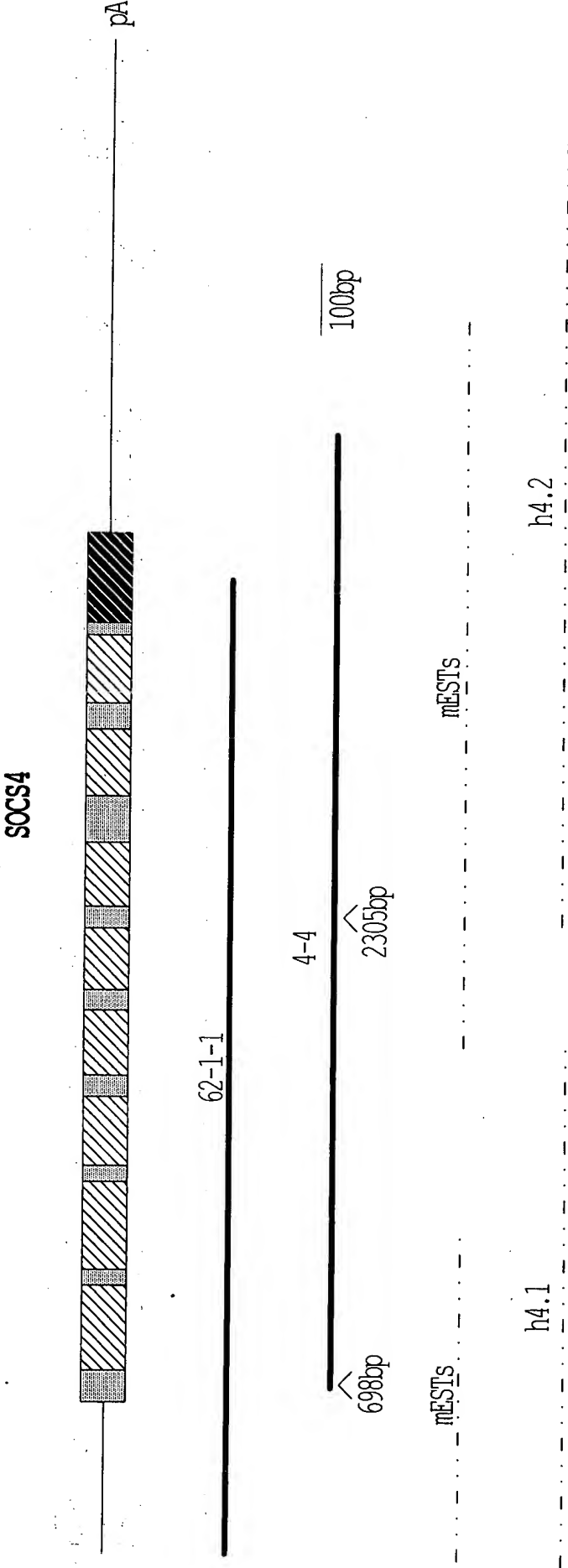
2305bp

mESTs

h4.1

mESTs

h4.2

100bp

Figure 17

h4.1

CTGTCTTCCTCCGCAGCGCGAGGCTGGGTACAGGGTCTATTGTCTGTGGTTGACTCCGTA

CTTTGGTCTGAGGCCTTCGGGAGCTTTCCCGAGGCAGTTAGCAGAAGCCGCAGCGACCGC

CCCCGCCCGTCTCCTCTGTCCCTGGGCCCGGGAGACAAACTTGGCGTCACGCCCTCAGCG

GTCGCCACTCTCTTCTCTGTTGTTGGGTCCGCATCGTATTCCCGGAATCAGACGGTGCCC

CATAGATGGCCAGCTTTCCCCCGAGGGTCAACGAGAAAGAGATCGTGAGATCACGTACTA

TAGGTGAACTTTTAGCTCCTGCAGCTCCTTTTGACAAGAAATGTGGTCGTGAAAATTGGA

CTGTTGCTTTTGCTCCAGATGGTTCATACTTTGCTTGGTCACAAGGACATCGCACAGTAA

AGCTTGTTCCGTGGTCCCAGTGCCTTCAGAACTTTCTCTTGCATGGCACCAAGAATGTTA

CCAATTCAAGCAGTTTAAGATTGCCAAGACAAAATAGTGATGGTGGTCAGAAAAATAAGC

CTCGTGACATATTATAGACTGTGGAGATATAGTCTGGAGTCTTGCTTTTGGGTCATCAGT

TCCAGAAAAACAGAGTCGCTGTGTAAATATAGAATGGCATCGCTTCAGATTTGGACAAGA

TCAGCTACTTCTTGCTACAGGGTTGAACAATGGGCGTATCAAAATATGGGATGTATATCA

GGAAACTCCTCCTTAACTTGGTAGATCATACTGAAGTGGTCAGAGATTTAACTTTTGCTC

CAG

h4.2

CTCTGTATGTCTGAATGAAGCTATAACATTTGCCTTTTTATTGCAGGTTTTCCTTTGGAA

TATGGATAAATACACCATGATACGGAAACTAGAAGGACATCACCATGATGTGGTAGCTTG

TGACTTTTCTCCTGATGGAGCATTACTGGCTACTGCATCTTATGATACTCGAGTATATAT

CTGGGATCCACATAATGGAGACATTCTGATGGAATTTGGGCACCTGTTTCCCCCACCTAC

TCCAATATTTGCTGGAGGAGCAAATGACCGGTGGGTACGATCTGTATCTTTTAGCCATGA

TGGACTGCATGTTGCAAGCCTTGCTGATGATAAAATGGTGAGGTTCTGGAGAATTGATGA

GGATTATCCAGTGCAAGTTGCACCTTTGAGCAATGGTCTTTGCTGTGCCTTCTCTACTGA

TGGCAGTGTTTTAGCTGCTGGGACACATGACGGAAGTGTGTATTTTTGGGCCACTCCACG

GCAGGTCCCTAGCCTGCAACATTTATGTCGCATGTCAATCCGAAGAGTGATGCCCACCCA

AGAAGTTCAGGAGCTGCCGATTCCTTCCAAGCTTTTGGAGTTTCTCTCGTATCGTATTTA

GAAGATTCTGCCTTCCCTAGTAGTAGGGACTGACAGAATACACTTAACACAAACCTCAAG

CTTTACTGACTTCAATTATCTGTTTTTAAAGACGTAGAAGATTTATTTAATTTGATATGT

TCTTGTACTGCATTTTGATCAGTTGAGCTTTTAAAATATTATTTATAGACAATAGAAGTA

TTTCTGAACATATCAAATATAAATTTTTTTAAAGATCTAACTGTGAAAACATACATACCT

GTACATATTTAGATATAAGCTGCTATATGTTGAATGGACCCTTTTGCTTTTCTGATTTTT

AGTTCTGACATGTATATATTGCTTCAGTAGAGCCACAATATGTATCTTTGCTGTAAAGTG

CAAGGAAATTTTAAATTCTGGGACACTGAGTTAGATGGTAAATACTGACTTACGAAAGTT

GAATTGGGTGAGGCGGGCAAATCACCTGAGGTCAGCAGTTTGAGACTAGCCTGGCAAACA

TGATGAAACCCTGTCTCTACTAAAAATACAAAAAAAAAAAA

Figure 18

SOCS5

57-2

5-3-2

mESTs

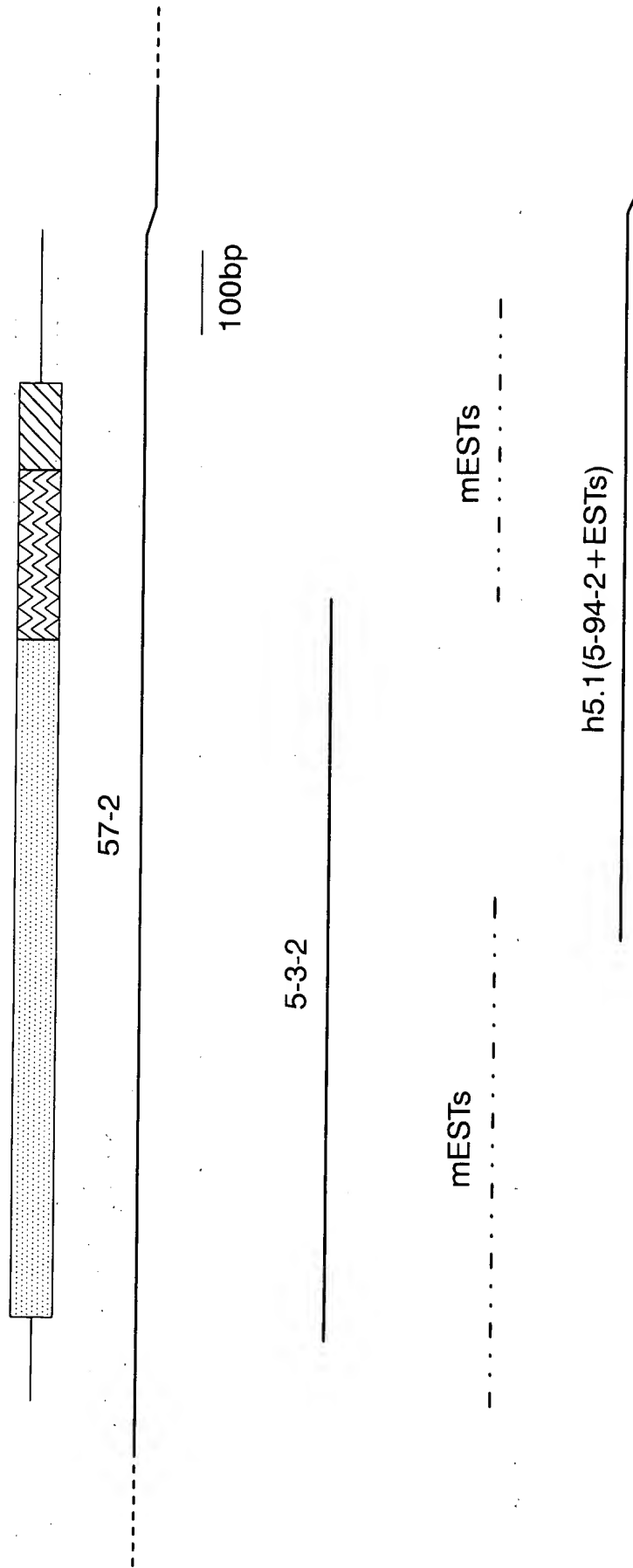mESTs

h5.1(5-94-2+ESTs)

100bp

Figure 19

cggcacgagccgggctccgtccggaggaagcgaggctgcgccgccggcccggcaggagcggaggacgg

gamgcgcgggcggtcgcgctcgccctgtcgctgactgcgctgccccggcccatccttgcctggccgca

ggtgccctggatgaggccgccgcgcgtgtcccggccgctgagtgtcccccgcggtcgcccggcgcctg

ccctcaagcggccgcctctccttgcccgggtccccgttttcccccggcgcagtcctcctccggtgggc

gcctccgcacctcggcgcaggcggcacggccctcgggccgggatggatccgccgggaagaggaagaca

agccggggcgttgagcccctgcgcacggtgccgccgcgcgtagtgggagcttactcgcagtaggctct

cgctcttctaatcaATGGATAAAGTGGGGAAAATGTGGAACAACTTAAAATACAGATGCCAGAATCTC

TTCAGCCACGAGGGAGGAAGCCGTAATGAGAACGTGGAGATGAACCCCAACAGATGTCCGTCTGTCAA

AGAGAAAAGCATCAGTCTGGGAGAGGCAGCTCCCCAGCAAGAGAGCAGTCCCTTAAGAGAAAATGTT

GCCTTACAGCTGGGACTGAGCCCTTCCAAGACCTTTTCCAGGCGGAACCAAAACTGTGCCGCAGAGAT

CCCTCAAGTGGTTGAAATCAGCATCGAGAAAGACAGTGACTCGGGTGCCACCCCAGGAACGAGGCTTG

CACGGAGAGACTCCTACTCGCGGCACGCCCCGTGGGGAGGAAAGAAGAAACATTCCTGTTCCACAAAG

ACCCAGAGTTCATTGGATACCGAGAAAAAGTTTGGTAGAACTCGAAGCGGCCTTCAGAGGCGAGAGCG

GCGCTATGGAGTCAGCTCCATGCAGGACATGGACAGCGTTTCTAGCCGCGCGGTCGGGAGCCGCTCCC

TGAGGCAGAGGCTCCAGGACACGGTGGGTTTGTGTTTTCCCATGAGAACTTACAGCAAGCAGTCAAAG

CCACTCTTTTCCAATAAAAGAAAAATACATCTTTCTGAATTAATGCTGGAGAAATGCCCTTTTCCTGC

TGGCTCGGATTTAGCACAAAAGTGGCATTTGATTAAACAGCATACCGCCCCTGTGAGCCCACACTCAA

CATTTTTTGATACATTTGATCCATCACTGGTGTCTACAGAAGATGAAGAAGATAGGCTTCGCGAGAGA

AGACGGCTTAGTATCGAAGAAGGGGTGGATCCCCCTCCCAACGCACAAATACACACCTTTGAAGCTAC

TGCACAGGTCAACCCATTGTATAAGCTGGGACCAAAGTTAGCTCCTGGGATGACAGAGATAAGTGGAG

ATGGTTCTGCAATTCCACAAGCSAATTGTGACTCAGAAGAGGATTCAACCACCCTATGTCTGCAGTCA

CGGAGGCAGAAGCAGCGCCAGGTGTCCGGGGACAGCCACGCGCACGTTAGCAGACAGGGAGCTTGGAA

AGTTCATACGCAGATCGATTACATACACTGCCTCGTGCCAGATTTGCTTCAGATCACAGGGAATCCCT

GTTACTGGGGCGTGATGGACCGATACGAGGCCGAAGCCCTTCTAGAAGGGAAACCGGAAGGCACGTTC

TTGCTCAGGGACTCTGCACAGGAGGACTACCTCTTCTCTGTGAGCTTCCGCCGCTACAACAGGTCTCT

GCACGCCCGGATCGAGCAGTGGAACCACAACTTCAGCTTCGATGCCCATGACCCCTGCGTGTTTCACT

CCTCCACWGTCACGGGGCTTCTCGAACACTATAAAGACCCCAGCTCTTGCATGTTTTTTGAACCGTTG

CTAACGATATCACTGAATAGAACTTTCCCTTTCAGCCTGCAGTATATCTGCCGCGCAGTGATCTGCAG

ATGCACTACGTATGATGGGATTGACGGGCTCCCGCTACCGTCGATGTTACAGGATTTTTTAAAAGAGT

ATCATTATAAACAAAAGTTAGGGTTCGCTGGTTAGAACGAGARCCAGTCAAAGCAAAGtaactcctg

tccccaaagggcactaactaagtctgctcctcccgtgcatcmgaactgcacccataggraggcagtca

gctgctaggatttcccacccagaatgggagcttagtcattagcctctgccctatggggtccgctgttc

ctcagacaaaggtgcctagggacagcaagatggcttgcaggtgttcggtgggctgtgacaactgaggg

aggcaactctggggcatttgctatgaagaattctatttcttaccgaagaacaaattattaatattgga

tgggtatttcaatagtgtgactaatgtttgaaattattttttctaagaattttttctataaccttcaga

aaaagtagtgatgtttgtagttactataaatcaagctttgaaagttcaaaacaaacaagttaaataaa

agactaccttccttttagagaaaacaaatgcaagttttcccagccacaggcattgtgcactgttaatg

ttagcttgttatcagctcctttctcctcc

Figure 20A

MDKVGKMWNNLKYRCQNLFSHEGGSRNENVEMNPNRCPSVKEKSISLGEAAPQQESSPLRENVALQLGLSPSKTFSRRNQ
NCAAEIPQVVEISIEKDSDSGATPGTRLARRDSYSRHAPWGGKKKHSCSTKTQSSLDTEKKFGRTRSGLQRRERRYGVSS
MQDMDSVSSRAVGSRSLRQRLQDTVGLCFPMRTYSKQSKPLFSNKRKIHLSELMLEKCPFPAGSDLAQKWHLIKQHTAPV
SPHSTFFDTFDPSLVSTEDEEDRLRERRRLSIEEGVDPPPNAQIHTFEATAQVNPLYKLGPKLAPGMTEISGDGSAIPQX
NCDSEEDSTTLCLQSRRQKWRWVSGDSHAHVSRQGAWKVHTQIDYIHCLVPDLLQITGNPCYWGVMDRYEAEALLEGKPE
GTFLLRDSAQEDYLFSVSFRRYNRSLHARIEQWNHNFSFDAHDPCVFHSSXVTGLLEHYKDPSSCMFFEPLLTISLNRTF
PFSLQYICRAVICRCTTYDGIDGLPLPSMLQDFLKEYHYKQKVRVRWLERXPVKAK*

Figure 20B

GATTAAACAGCATACAGCTCCTGTGAGCCCACATTCAACATTTTTTGATACTTTGATCCATCTTTGG

TTTCTACAGAAGATGAAGAAGATAGGCTTAGAGAGAGAAGGCGGCTTAGTATTGAAGAAGGGGTTGA

TCCCCCTCCCAATGCACAAATACATACATTTGAAGCTACTGCACAGGTTAATCCATTATTAAACTGG

GACCAAAATTAGCTCCTGGAATGACTGAAATAAGTGGGGACAGTTCTGCAATTCCACAAGCTAATTG

TGACTCGGAAGAGGATACAACCACCCTGTGTTGCAGTCACGGAGGCAGAAGCAGCGTCAGATATCTG

GAGACAGCCATACCCATGTTAGCAGACAGGGAGCTTGGAAAGTCCACACACAGATTGATTACATACA

CTGCTTCGTGCCTGATTTGCTTCAAATTACAGGGAATCCCTGTTACTGGGGAGTGATGGACCGTTAT

GAAGCAGAAGCCCTTCTCGAAGGGAAACCTGAAGGCACGTTTTTGCTCAGGGACTCTGCGCAAGAGG

ACTACTTCTTCTCTGTGAGCTTCCGCCGATACAACAGATCCCTGCATGCCCGAATTGAGCAGTGGAA

TCACAACTTTAGTTTCGACGCCCATGACCCGTGTGTATTTCACTCCTCCACTGTAACGGGACTTTTA

GAACATTATAAAGATCCCAGTTCGTGCATGTTTTTTGAACCATTGCTTACTATATCACTAAATAGGA

CTTTCCCTTTTAGCCTGCAGTATATCTGTCGCGCGGTAATCTGCAGGTGCACTACGTATGATGGAAT

TGATGGGCTCCCTCTACCCTCAATGTTACAGGATTTTTTAAAAGAGTATCATTATAAACAAAAAGTT

AGAGTTCGCTGGTTGGAACGAGAACCAGTCAAGGCAAAGTAAACTCTCCGGTCCCCAAAGGGTGTTA

ACTAGGTCCGCTTTCATGTGCATCAGACAGTACACCTATAGCAAGCACACGTAGCAGTGTTAGGCTT

TTTCATACAGTATGTAAGCTTAGTGTTAGTATCTGTCAGATGCTACCTGCTGTTACTTATTCAGATA

AACATGGTGCCTATTGGAACAATAGCGGATAGAGCTACAGGTGTTCAGTAAGACTACAAAAACATTT

TGCCTATTTCGCTAACAGTTTGGTTTTTAATGGCTGTGGTATTTGAGTGAGGCAACTCTGGGGCATT
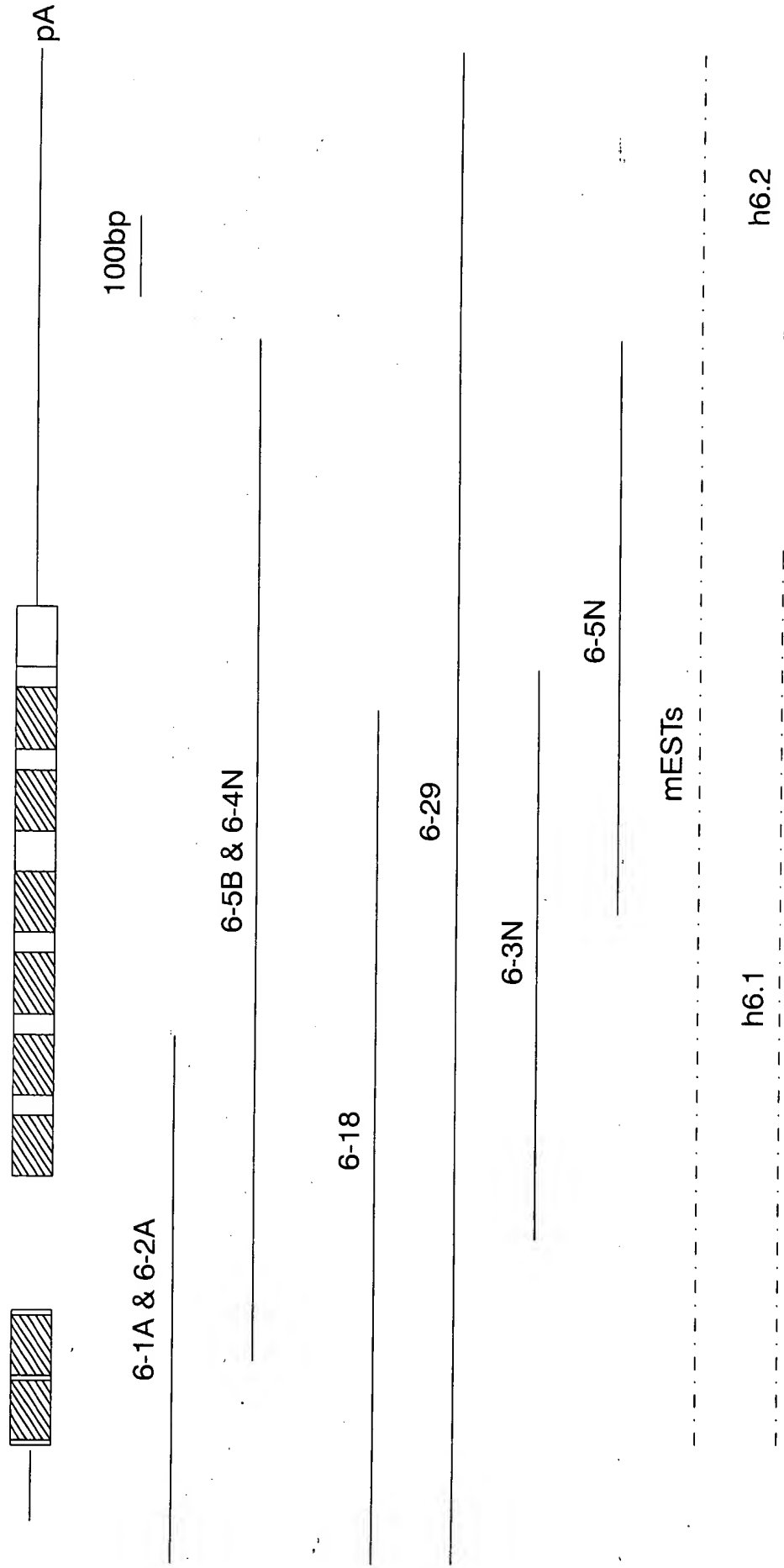
TGTTATGAAGAAATG

Figure 21

SOCS6

pA

100bp

6-1A & 6-2A

6-5B & 6-4N

6-18

6-29

6-3N

6-5N

mESTs

h6.1

h6.2

Figure 22

ggcacgagaggcggtggtggcggcggcggcgcggcgggcgcggcggcggaatgaaggcccacggccgccctgggggctgagcgcgccgccctggg
gcgggccgccgcgtcctcATGGAGGCCGGAGAGAGCCGCTGCTGGCTGAACTCAAGCCTGGGCGCCCCCACCAGTTCGACTTCGAAGTCAAGCTGC
GAGACCTGGAGCGGTGGCCTTCTCGCCCAGAGCGGTTCCTGCTTGGTCTTCAAGGACACTGCTGGTCCCTGGCCCTTAGAGGAACA
GTTCATCCCTAAAAGGATTCGAAGCCAAGAGCCGAAGCAGCAAGAATGACCCAGGAAACTCTGGGCACGTCACCATCCCAGCGCGCCTGATGTTTCTTGCCTGATC
TTGTGTGGGGGCTGGCCTTCAGCCCGTGCCCTCCACCCAGCAGATTGGGAGGTACAGAGGCCTCCTGCTTCTGAATCTTTCTGGCCACAGAGCGTCGTGAGAGA
CTGGCCACAGGTCTCAACGATGGGCAGATCAAGATTTGATTTGGTTCTGTGATCTTGAATTTGGGACCTGAATAAACACGGTAAGCAGATCC
TCTGAGCTTCACGCCCAGCGGCAGTTTCGATCCGCCATCTGCAGTGGGTTTACTGCTGTCCCATCTCCCCTGACTGTAGCATGCTGTCTGCAGCTGGGAGAAGTCGGTCTTTCTG
AGGTGTTATCCGGCCATCTGCAGTGGGTTTACTGCTGTCCCATCTCCCCTGACTGTAGCATGCTGTCTGCAGCTGGGAGAAGTCGGTCTTTCTG
TGGAGCATGCGGTCCTACACACTAGAGGCCACCAAAGCCAGTGTTGTCTCCTGATTTCTCTGCGATTTCAGCCTTGCTTGTCAC
AGCTTCGTATGACACCAGTGTGATTATGTGGAGCACCCGGCGCGAGGCTGAGGTCACTTCATCACACACAACTTGAACCCACCATGATGACA
GTGACGTCCACATGAGCTCCCTGAGGTCCCGTGCTTCTCACCTGAGGCTTGTATCTCGGTGGCAGATGACAGGCTGCTCAGGATCTCGGGCT
CTGGAACTGAAGGCTCCGGTTGCCTTTGCCTCCGATGACCAATGGTCTTTGCTGCACGTTCTTTCCCACAGGTGGAATTATTGCCACAGGGACGAGAGA
TGGCCATGTCCAGTTCTGGACAGCTCCCCGGGTCCTCCTGAAGCACTTATGCAGGAAAGCCCTCCGAAGTTTCCTGACAACGTATCAAGTCC
TAGCACTGCCAATCCCCCAAGAAGATGAAAGAGTTCCTACACATACAGGACTTTCTAGcagtgccgctccccccacctcctgcagcagcagtacaag
ggactggctaggatggatggacgctcaggcagctcacactggaccttcctcctccccatggcccagtgtggacctgcaagtagtcctgcgtgccgccaacttct
gtggtgccggccttacctccgtgttcttcatccgtggtgagcagccttcgtcagtcctcagtctchtggaaagccaagtgcagttgtgatgttgctgggtaat
aaagcaagcggggctccagagcggtgcatggttgaagtccctggtgcggcgccaagccacactccctaactggaagaactctggtgttggttcctggtgactgagctcc
cagccagcgcggctgcgtggtcatggttgaagtccctggtggtgtctgagtcggctgcctgctcagctgcgcgtcagctgagcagcgagtattcagatcatacgaggagggcttcc
tcaccatacactagtgccgctgcggtcacattatcagcaagtggttgcatgtgagagaagtaacaagcggatcatcagtagtaggtaacactgttttctcaattgtctctgaaa
tcggtgcaggtcagatgccgcttcagatgtgccagtgccagtgtgtggccagtcctaggtctaagtcgttcagtcgtgctgacactgcttgtctcgtgctgtgtcacatgtgtgttg
aaacagagttcttaagtagttgctgacctcatgggatgtgaccctccagtgttccaactgcccaaacagacagcccctccagcaccgttcttcgacgcggtagcagctac
tctctgtctgtgaccttcatgggatgtgaccctccagttcaactgtctcaacagcacaatctttaaaaatatattttaaatattttaaaagaaactcaacatcttattcttcttggcctttcttaa
ctattcaagacgcctcacacacaagacaaatctgcttagaaagttaatatatgcatagagaggagtcctctattgaagaacaatgcaaaatgaggctttcattgaagg
gaaaaaaaaaaa

Figure 23A

MEAGEEPLLLAELKPGRPHQFDWKSSCETWSVAFSPDGSWFAWSQGHCVVKLVPWPLEEQFIPKGFEAKSRSSKNDPKGRG
SLKEKTLDCGQIVWGLAFSPWPSPPSRKLWARHHPQAPDVSCLILATGLNDGQIKIWEVQTGLLLNLSGHQDVVRDLSFT
PSGSLILVSASRDKTLRIWDLNKHGKQIQVLSGHLQWVYCCSISPDCSMLCSAAGEKSVFLWSMRSYTLIRKLEGHQSSVV
SCDFSPDSALLVTASYDTSVIMDPYTGARLRSLHHTQLEPTMDDSDVHMSSLRSVCFSPEGLYLATVADDRLLRIWALEL
KAPVAFAPMTNGLCCTFFPHGGIIATGTRDGHVQFWTAPRVLSSLKHLCRKALRSFLTTYQVLALPIPKKMKEFLTYRTF*

Figure 23B

h6.1

GACACTGCATCGTCAAACTGATCCCCTGGCCGTTGGAGGAGCAGTTCATCCCTAAAGGGTTTGAAGCC

AAAAGCCGAAGTAGCAAAAATGAGACGAAAGGGCGGGGCAGCCCAAAAGAGAAGACGCTGGACTGTGG

TCAGATTGTCTGGGGGCTGGCCTTCAGCCTGTGCTTTCCCCACCCAGCAGGAAGCTCTGGGCACGCCA

CCACCCCCAAGTGCCCGATGTCTCTTGCCTGGTTCTTGCTACGGGACTCAACGATGGGCAGATCAAGA

TCTGGGAGGTGCAGACAGGGCTCCTGCTTTTGAATCTTTCCGGCCACCAAGATGTCGTGAGAGATCTG

AGCTTCACACCCAGTGGCAGTTTGATTTTGGTCTCCGCGTCACGGGATAAGACTCTTCGCATCTGGGA

CCTGAATAAACACGGTAAACAGATTCAAGTGTTATCGGGCCACCTGCAGTGGGTTTACTGCTGTTCCA

TCTCCCCAGACTGCAGCATGCTGTGCTCTGCAGCTGGAGAGAAGTCGGTCTTTCTATGGAGCATGAGG

TCCTACACGTTAATTCGGAAGCTAGAGGGCCATCAAAGCAGTGTTGTCTCTTGTGACTTCTCCCCCGA

CTCTGCCCTGCTTGTCACGGCTTCTTACGATACCAATGTGATTATGTGGGACCCCTACACCGGCGAAA

GGCTGAGGTCACTCCACCACACCCAGGTTGACCCCGCCATGGATGACAGTGACGTCCACATTAGCTCA

CTGAGATCTGTGTGCTTCTCTCCAGAAGGCTTGTACCTTGCCACGGTGGCAGATGACAGACTCCTCAG

GATCTGGGCCCTGGAACTGAAAACTCCCATTGCATTTGCTCCTATGACCAATGGGCTTTGCTGGCACA

TTTTTTCCACATGGTGGAGTCATTGCCACAGGGACAAGAGATGGCCACGTCCAGTTCTGGACAGCTCC

TAGGGTCCTGTCCTCACTGAAGCACTTATGCCGGAAAGCCCTTCGAAGTTTCCTAACAACTTACCAAG

TCCTAGCACTGCCAATCCCCAAGAAAATGAAAGAGTTCCTCACATACAGGACTTTTTAAGCAACACCA

CATCTTGTGCTTCTTTGTAGCAGGGTAAATCGTCCTGTCAAAGGGAGTTGCTGGAATAATGGGCCAAA

CATCTGGTCTTGCATTGAAATAGCATTTCTTTGGGATTGTGAATAGAATGTAGCAAAACCAGATTCCA

GTGTACTAGTCATGGATTTTTC

h6.2

ACCATGGTTCCAAGTCCTCTCCCCTGTGGTCAAGTTGCCCGAATGTTGGGCCCAAGTGCCTTTTCCTC

CTTGGGCCTCCCCTTCTGACCTGCAGGACAGTTTTCCGGAGCCCATTTGGTATGAGGTATTAATTAGC

CTTAACTAAATTACAGGGGACTCAGAGGCCGTGCTCCTGACCGATCCAGACACTATTTTTTTTTTTTT

TTTTTAACAATGGTGTGCATGTGCAGGAAATGACAAATTTGTATGTCAGATTATACAAGGATGTATTC

TTAAACCGCATGACTATTCAGATGGCTACTGAGTTATCAGTGGCCATTTATTAGCATCATATTTATTT

GTATTTTCTCAACAGATGTTAAGGTACAACTGTGTTTTTCTCGATTATCTAAAAACCATAGTACTTAA

ATTGAAAAAAAAAA

Figure 24

SOCS-7

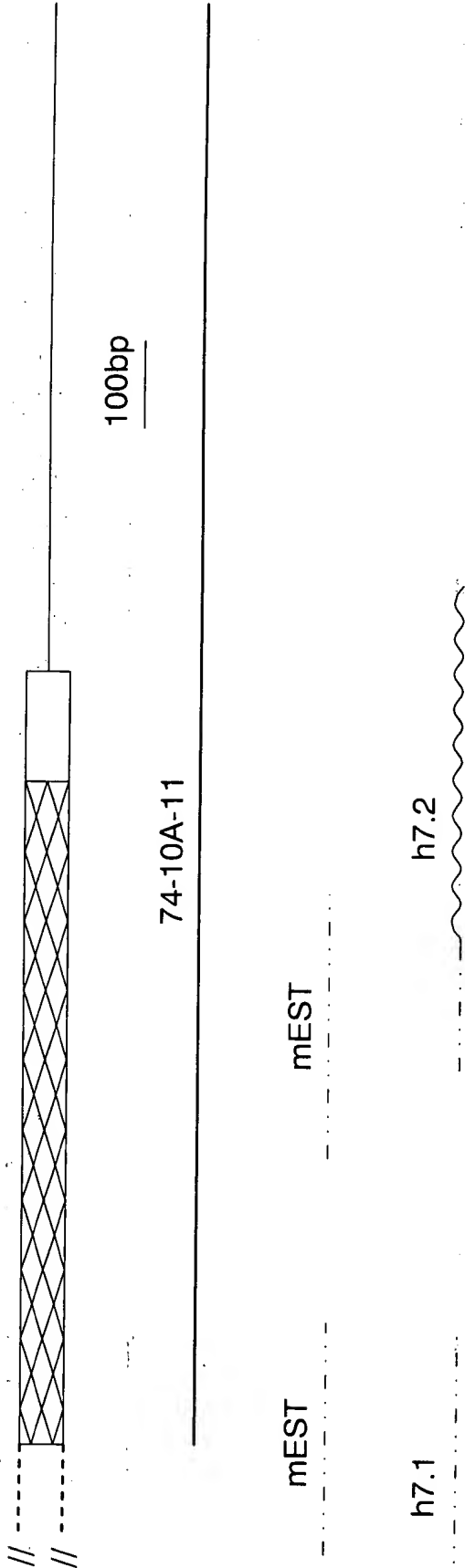100bp

74-10A-11

mEST

mEST

h7.2

h7.1

Figure 25

GGCACGAGGCGGGGTCAGGGCGGAGGCTGAGGACCAAGTAGGCATGGCGGAGGGCGGGACCGGCCCCG
ATGGACGGGCCGGCCCGGGACCCGCAGGTCCTAATCTGAAGGAGTGGCTGAGGGAGCAGTTCTGTGAC
CATCCACTGGAGCACTGTGACGATACAAGACTCCATGATGCAGCCTATGTAGGGGACCTCCAGACCCT
CAGGAACCTACTGCAAGAGGAGAGCTACCGGAGCCGCATCAATGAGAAGTCTGTCTGGTGCTGCGGCT
GGCTTCCCTGCACACCACTGAGGATCGCAGCCACTGCAGGCCATGGGAACTGTGTGGACTTCCTCATA
CGCAAAGGGGCCGAGGTGGACCTGGTGGATGTCAAGGGGCAGACTGCCCTGTATGTGGCTGTAGTGAA
CGGGCACTTGGAGAGCACTGAGATCCTTTTGGAAGCTGGTGCTGATCCCAACGGCAGCCGGCACCACC
GCAGCACTCCTGTGTACCATGCCTYTCGTGTGGGTAGGGACGACATCCTGAAGGCTCTTATCAGGTAT
GGGGCAGATGTTGATGTCAACCATCATCTGAATTCTGACACCCGGCCCCCTTTTTCACGGCGGCTAAC
CTCCTTGGTGGTCTGTCCTCTATACATCAGTGCTGCCTACCATAACCTTCAGTGCTTCAGGCTGCTCT
TGCAGGCTGGGGCAAATCCTGACTTCAATTGCAATGGCCCTGTCAACACCCAGGAGTTCTACAGGGGA
TCCCCTGGGTGTGTCATGGATGCTGTCCTGCGCCATGGCTGTGAAGCAGCCTTCGTGAGTCTGTTGGT
AGAGTTTGGAGCCAACCTGAACCTGGTGAAGTGGGAATCCCTGGGCCCAGAGGCAAGAGGCAGAAGAA
AGATGGATCCTGAGGCCTTGCAGGTCTTTAAAGAGGCCAGAAGTATTCCCAGGACCTTGCTGAGTTTG
TGCCGGGTGGCTGTGAGAAGAGCTCTTGGCAAATACCGACTGCATCTGGTTCCCTCGCTGCCGCTGCC
AGACCCCATAAAGAAGTTTTTGCTTTATGAGTAGcattcacatgcagtgctgactgcaatgtggaagc
cgatcacctgcagtgaaaactgacacagactctggcatcctgggaaccatggcctgtgctgccagctt
gatccttggctgtcagtgaagaaaaaacggctgtgttctcttggactgtgattctatctcaggtgctt
gggccatcgaacgctccttgagtcattgtcaactgagaggcacatacaaacttaattttgttcctctt
cagtctctctgttttggattcttcctggcaatgtgtgcagcatgggctgagcctggtgattgccctag
tggggaaggctttttttctccaggctatgcatctatttatgttcctactttgcaatttattgttctttt
aaggcttgatatcaaaacagaaagaggtttgttaagaaaagatataggggagaaaggaattccggttcc
gtgcacttgctagcctgctttccttgcctgggtttgtctgtctatgctgcctggtgcacatcccttct
ctttgctgccactgttctattttgggagttgtcttccgtctaagatggcttctggggttctatcttat
tgcacagaggtcccagaacagtgttcatagggcaccatctgctctgccaagggttttctgatgtctta
ccctgggggatcttcagacagtggttacctttaggagacccacctggaactaaccattaagtgactgcc
cacattcagatcagggaccatcttaatagtactcactgccagtcctcacaagagaagatgacacgggt
gctctcttcagacactcccatacaggaagttggaaaatgtcttggtcacctgggttgttcccaggcta
caacttcttggtgttccactaaraccagratatcctagttttttgggttgactgttccctccccactt
tccttgaancccaatgcccntttgtktnggttgcttccctaaaaktt

Figure 26A

....ARGGVRAEAEDQVGMAEGGTGPDGRAGPGPAGPNLKEWLREQFCDHPLEHCDDTRLHDAAYVGDLQTLRNLLQEESY
RSRINEKSVWCCGWLPCTPLRIAATAGHGNCVDFLIRKGAEVDLVDVKGQTALYVAVVNGHLESTEILLEAGADPNGSRHH
RSTPVYHAXRVGRDDILKALIRYGADVDVNHHLNSDTRPPFSRRLTSLVVCPLYISAAYHNLQCFRLLLQAGANPDFNCNG
PVNTQEFYRGSPGCVMDAVLRHGCEAAFVSLLVEFGANLNLVKWESLGPEARGRRKMDPEALQVFKEARSIPRTLLSLCRV
AVRRALGKYRLHLVPSLPLPDPIKKFLLYE*

Figure 26B

h7.1

GCATCCATGGCGGAGGGCGGCAGCACGACGGGCGGGCAGGGCCGGGCTCCGCAGGTCGTAATCTGAAG

GAGTGGCTGAGGGAGCAATTTTGTGATCATCCGCTGGAGCACTGTGAGGACACGAGGCTCCATGATGC

AGCTTACGTCGGGGACCTCCAGACCCTCAGGAGCCTATTGCAAGAGGAGAGCTACCGGAGCCGCATCA

ACGAGAAGTCTGTCTGGTGCTGTGGCTGGCTCCCCTGCACACCGTTGCGAATCGCGGCCACTGCAGGC

CATGGGAGCTGTGTGGACTTCCTCATCCGGAAGGGGGCCGAGGTGGATCTGGTGGACGTAAAAGGACA

GACGGCCCTGTATGTGGCTGTGGTGAACGGGCACCTAGAGAGTACCCAGATCCTTCTCGAAGCTGGCG

CGGACCCCAAC

h7.2

GAGGAAGAAGAAAGTGGACCCTGAGGCCTTGCAGGTCTTTAAAGAGGCCAGAAGTGTTCCCAGAACC

TTGCTGTGTCTGTGCCGTGTGGCTGTGAGAAGAGCTCTTGGCAAAACCGGCTTCATCTGATTCCTTCG

CTGCCTCTGCCAGACCCCATAAAGAAGTTTCTACTCCATGAGTAGACTCCAAGTGCTGCGGTTGATTC

CAGTGAGGGAGAAAGTGATCTGCAGGGAGGTGGACACCGAGCCCTGAGTGCTGTGCTGCTGCTGGTCT

CCTGATGGCTGTTGCTGCAGAAGATGTCCTCGTAGACTGTCATTGCTCCTCAGGTGCCTGGGCCGCTG

AACAGTCCTTGGGTCATTGTCAGCTGAGAGGCTTATACTAAAGTTATTATTGTTTTTCCCAAGTTCTC

TGTTCTGGATTTTCAGTTGCATATTAATGTAACGGGCCATGGGGTATGTACATGTAGGGGCTGAGGTT

GGAGGCCTACTAATTTCCTGTAGGGAAGACTCCCAGCACTTCTGGAACTGTGCTTCTCTTTATTTTTC

TACTTCTCAATTTGATGGTTCGATTAAAGCCTTCTAGTATCTCAATGAAAA

Figure 27

100bp

m8.1
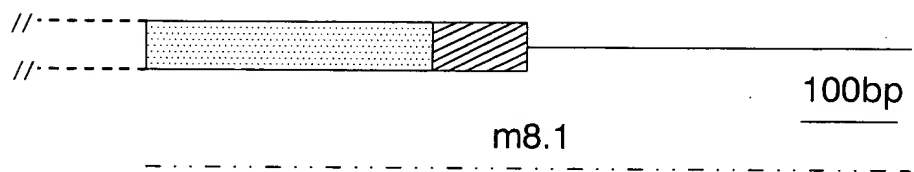
Figure 28

CTGATGTCCGCAATTCTGAAGGTTGGACACCACTGCTGGCTGCCTGTGACATCCGCTGTCAATCCCC
AAAGGATGCTGAGGCCACCACCAACCGCTGTTTTCAACTGTGCCGCTTGCTGCTGTCTGTGGGGGCA
GATGCTGATGAATACATACCGTGTAGTTCAGCTTCCTGAGGAGGCCAAGGGCTTGGTGCCACCAGAG
ATTCTACAGAAGTACCATGGATTCTACTCTTCCCTCTTTGCCTTGGTGAGGCAGCCCAGGTCGCTGC
AGCATCTCTGCCGTTGTGCGCTCCGCAGTCACCTGGAGGGCTGTCTGCCCCATGCACTACCGCGCCT
TCCCCTGCCACCGCGCATGCTCCGCTTTCTGCAGCTGGACTTTGAGGATCTGCTCTACTAGgcttgc
tgccctgtgaacaaagcagaccccaccccacccccaagggcatctctcagcaatgaatgatgcaagg
cggtctgtcttcaagtcaggagtggacgccttgatccacacttgagagaagaggccagatcagcacc
yggctggtagtgatngcagagggcacctgtgcagatctgtgtgcgcactggaaatctctaggctgaa
ggcyagagcaaatggtgcargtgttagtccttgggangagagacaganggtgagaaagcaagacaga
ggtgagagtgcacatgtcaagtggtagattgccttaaaagaaagctaaaaaaagaaaaagattcggg
cgaacttctttaggggtaatgctgcagcgtgttaaactgactgaccagcgtccatatctttggaccc
ttcccgggtgaaaaagccccttcatcctccagcgctccccaagggtgcttagcaataccgggtgctt
ttctgccgcaaagtgagttaccaaa

Figure 29A

. . . . MSAILKVGHHCWLPVTSAVNPQRMLRPPPTAVFNCAACCCLWGQMLMNTYRVVQLPEEAKGLVPPEILQKYHGFYS
SLFALVRQPRSLQHLCRCALRSHLEGCLPHALPRLPLPPRMLRFLQLDFEDLLY*

Figure 29B

SOCS-9

100bp
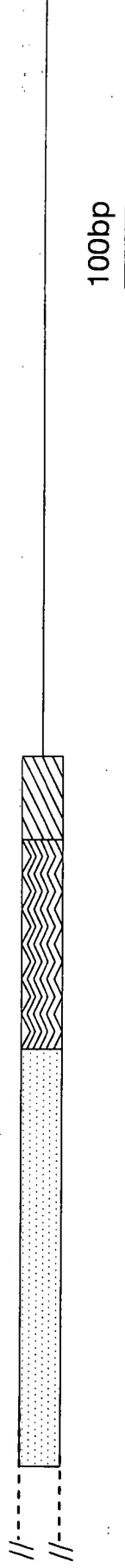
h9.1

m9.1

Figure 30

GTGGGGGCGTCATCATGACCTCCTCTAGGGCTCTGCAACATGACTCCTGTGGTGCAAATCAACAAAT

TGTTCACTGATGAATCCACAAGGATCTCTGGGCCTACAACCAGGTCCTGGTCCACATGACTGTCGTC

TTCGGAGAAGGCACCACTCGCCCCCGGCAGGTACGGCTGACACCTCCATGGGAGAAGACGTATCCAG

GCAGCAGCTGCGCGGCCCTTCAAGAGGGCACATCCCGTCATCTAAAGGCACGGTGTACTGAAGGTAG

TCCTGAGACATGAGTCCGATTACTACAGGCACGTGTTCCTCCAGGTGGAGGCTCAGGTCCCCGGGTG

AGCTGGGGCTGCAGCGGGACTCAGGGCGCGGCTCTGGCTGCAGGTCTCGCAGCTCCCTGGGCTGTAG

CTCCCGCAGATCCTTGCGCACACCGTTGACTGGT

Figure 31

```
TTAATAGTACCTACATAGTAGAAAATTATAACTCCACTTAAAACAATGTTTCTTTCTATTCAAATCAATTTAAAACTTTTTATAAACATTAATGTTGCAAGAG
AATCCAGTCCATTTATGAAAATTAGTTGACAATCAAGTTCACCCAAGAAAAATGTTGACTAAGCTAAAGAAATCACAGATAAAACATTTTACCAAAAGGATAGGTA
ACACACAAAAAAATGCTATCACAGAGAAGCTATGATCATCTAATATTTCTTTAATAATAATTCTAGTTCCATAGTTTTCATGTTATGCCAATTTGTACCGAGTT
TAATTACAGAAAAGGCAACAATTTCTAAATTGGTGTATACATTCTTTAATGTAAGGCCATTTATTAAAATAGACAAACTAGAAGATGAAAACG
AAGGCAACAGAAAAAATTCAACTTTTCACAACCAAAAGAATTAGCACAACCTTAGAAATAATTAGAAAAAAGTGTGTTAAAAGATATGTTGCAGATCTCCGTTC
CATTACCCAAGATTATGTCAATTCACGATTCTAAATAAATCTTTTAAAGTAAGAGATTAAAAACTCATCTTCAGTGTATATGTAAATTCCGTGGTTTATCACA
CAGGTATGTTTATTCAACACTGCTTTGGAAATGGACCATTTAAAAGGACAATGGCAATTTCCATTCTGTTAAGTTTCATTCAACCTTTACTTAGGGGTTGATTACC
ACATGAAAATGTGCTTTTAATGCATAAAAATCACAGTGGATTAGCCAGCAAAAGGGACTGGGCGGGGGGCATTGAGGAGAATTGATAATTCACATTGTGATTA
TTCTGCACATTGATGAAACATAATTCACACCTCTAAAACCTCAAGACTTCCCTTTTTTAAAGAACCAAAATAAACCCAAGACACACCTTGCTGACACTTCCCCACCC
CTAAACAAACTGATGACTCTTTACACATAAAACTGAAATAGTTATGGCAGCAAAAGATTTGTGAAACTGTATTTCAATCTCTTGTTC
TTATTCCCAAAGTGCAAGATGCAGGGTTCTCAATCTTTCAGTAGTGCTTCTCCTGTAAATAATCCTTCATTTGTTGGCAAAGGCAGTTTCTGAATTAAGTCTA
TTCTGGTATACTGACGTATAACAAAACGACACAGGTACTGCAACGAGCGCACCTGGTTGGCAAGTTCTGACGGAAGTGCAGATTCCAG
GCAGCGAGACCTTGAATAACAAAAAGCTCCCATTTCAGAGTCCAATTCTAGTGTGAAGTGTTTTACCATGGGAGCGAAAGTCACAGCTTAAAAGGTAACGGTCGTCGTTCAT
AAAAGCTAAACCTACCATTTGAGTGCTCAATTCTAGTGTGAAGTGTCCCAGTACCATCCTTGCTTTGCAAGTTTTTCAGCTCCTCTG
CAAGAAAAGAACCATCTGGCACGTTTGCTAGCTTCCCTTGCTAGCTACTTTGCACTGAGTCATAAACTCTTGCAACCCCAGGAGCAGAGTTCGGATCAAAATTCAAATGACAGCGCATAACTT
TAAGGCTTGTCACAACCATGGGACCACTACTTTGCCAGTGAGTCCACTGAAAGTTCCCCTTGGATTGGATTAATTCAAATGGTGAAGATTGGAGGGACAT
TCAGCCACGTGGGGCTTTCGTCCAGTGAGTCCTCTGCAACATGACTCCCGTGGTGCCAATCAACAGCCATTCACCGGACTGATCCACCGAAGATCTCTGGGGGCGACAACTAG
CCATCGTGAACCCGCTCTCCCGGGGTTCTGCAACATGCGCGCCCTCCCACTTGAGGAGAAAGCGCGCCCTCCCACTTGAGGAGAAGCCGCAGAGATCCTGGGGGCGACAATAGCTCCG
GTCCTGGTCTACCTGACTCTCATCCTCGGGGAAAGCGCGCCCTCCCACTGAGGCACAGTATACTGAATGTAGTCCTGAGGCATAAGTCCAATAACGACAGGCACACATGTTCATCCAGGTGAAG
TGATCCTTCCAAAGGATACATCCCCTCATCTAAAGGACAGTATACTGAATGTAGTCCTGAGGCTGCTCCTGGCACGTGGTCTCAGACTGGAGGTCGT
ATGCAGGTCTCCATTATGAGAAGCCGAGCTCTTCAGTGAATTGGCTTCGTCCCTGGCACGTGGTCTCAGACTGGAGGTCGT
```

SOCS-10

100bp

10-9

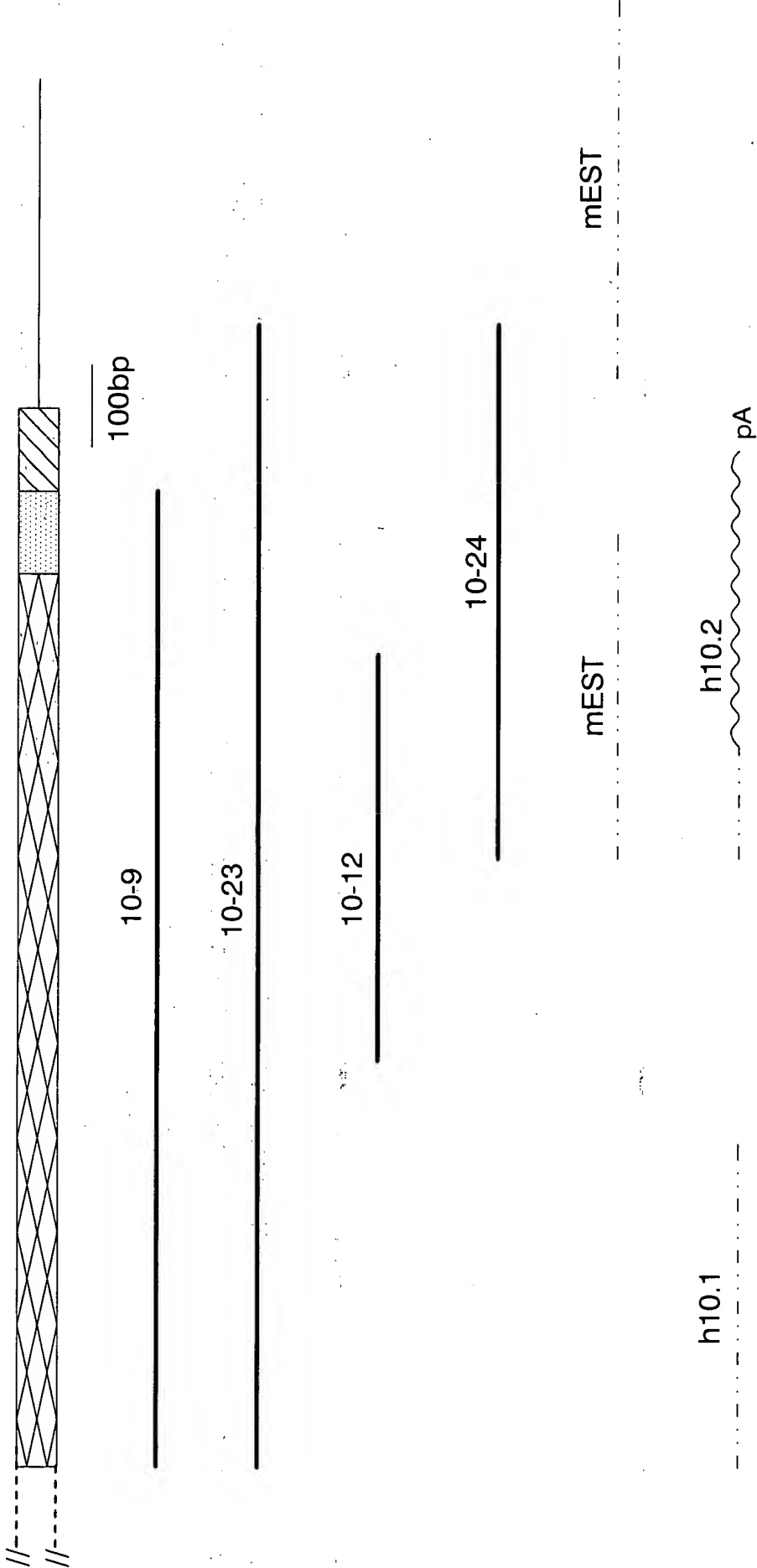10-23

10-12

10-24

mEST

mEST

h10.2

pA

h10.1

Figure 33

```
GGCACGAGGCTGTGTCCAGCACACAGAGAGAGGGCCCGGCCATCTGCTTTGGTTCAGAGCCCTGTGTCTGTGTCACTTAGACTCTTCCTCCCGGCT
CGCAGCTCACCCTCCATCCTCCTTACTGGCTCCAGCATGACTCGCTTCTCTTATGCAGAGTACTTTGCTCTGTTCACTCTGGCTCTGCACCTTCC
AGGTCCCCTTCGTCTCCCGAGAACCCACCGCCCGCCACCCCTGGGTCTCGTTCCAAGGGGTCCTTGAAGATCATGATCCAGGATGGAAGAATCTTGCA
TCCCAGATGGCGGCTATGGACCCCGTGCTGAAGGCCATCAAGGAAGGGGATGAAGAGGCCTTGGCTGCCTACTATGGCCACATGGCCAAGCCTACCCAGGGACC
GAGCCCAACAAGGAGGGCTGGCTGCCGCCTCCACGAGCTGCCTACTATACCTGGCCACATGCAGAGAACACCTGGATTGCCTCCTCGTGCTGCTCCCAGGCGGGGGGCA
ATTGACCAACGCACACTGCAGGAAGAGACAGCATTATACCTGGCCACATGCAGAGAACACCTGGATTGCCTCCTCGTGCTGCTCCCAGGCGGGGGGCA
GAGCCTGACATCTCTAACAAATCCAGGAGACTCCACTTTACAAAGCCTGTGAGCGCAAGAACGCGGAGGCGGTGAGGATATTGGTGCGATACAAC
GCAGACGCCAACCACCGCTGTAACAGGGGCTGGACCCGCACTGCTCGTCTCCCGCCAATGACCTGGAGGTCATGGAGATCCTAGTGAGTGGC
GGGGCCAAGGTGGAGGCCAAGAATGTTCTACAGCATCACCCCTTTGTTTGTGGCTGGCAGCTGGGCAGCTGGGAGGCCCTGAGGTTCCTGGCCAAG
CATGGTGTGCAGACATCAACACGCAGGCCAGTGACAGTGCCCCTCTACGAGGCCATCAGCCCTCTACGAGGCCAAGAATGAGCAAGACGTGGTAGAGTTTCTCTC
TCTCAGGGCGCCGATGCTAACAAAGCCAACAAGGACGGCCTGCTCCCCCTGCATGTTGCTCCAAGAAGGGCAACTATAGAATAGTGCAGATGCTG
CTGCCTGTGACCAGCCGCCGACGCGGCGTGCGCGCGCCGTAGCGGCATCAGCCCGCTGCCCGAGCGCGCCCGCCCAGTTCTGCGCTCTACTTCGCTGTGGTC
CTGGCCGCGCCGCTTCGACGTGAACGCACACCTCTGGCTCCGAGCGGCGGCGCGACCCCAACCGCGATGTCATCAGCCCCTCTGCTGCTCCTCGTGCCCATCCGCCACGGC
AACAACAATGTGTACGCCACCGAGCTGTTGCTGGCCACCGAGCTGTTTGCTGGGCGGGGCTGTTGCTTCGTGCTGGTGGTCTGTGGTC
TGCCTGCGCACCATGCAGCTGCTGTTGACCAGCTGCGTGCGCGCGCCAACATGCCCTTCCAGCCACCATCATGTTT
GCCATGAAGTGCCTGTCGTTACTCAAGTTCCTTATGGACCTGCGATGGCACCTCGGCTGCGATGGGCAACGGGGCCGCCACCAC
CCGCCCCGCGACCTGGCCGCTTCCACGACGCACCCGTGACGACAAGGCACCCGTGGTGGTCAGTTCTCTGTGTCGGCCCCGGAAGTGA
GCCGCTGGGGCGGGGACCCATCATCGATGTCCTCCTCCTGACTATGTGGGCAACGTGCCAGCTGTCCCGGGGTTCGGAAGGAGCACATCGACAGCGTTTGAGG
ACTGGGCTGTCATCAAGGAGAAGGCAGAACCTCCGAGACCTCCGGCCGAGCTCAATCAGATACTTGAAATATGAGAATACACAGTAAccagcctggagaggagagatggccttca
gactgtttccgggacgccccaggtggcctgcatccaggaccccctgggtcagaacaggtgtgaccttgacctgggtcttcttgctggagcttcacccaa
agtgagaacctgatgtggggagtggacgtggtcctgggcaggaaatccttcacactgtcagcggatcgcagacccgctctgcttctggccatagccagagacc
ttcaacctggggccaggagagctcggtgtctgggcaaggtgccaggcaggaaatatttattccgtgacacaataacgttgtatcagaaaaaaaacatgggcg
ccctcagcttcaggctttcaggcggtgcgaggagacgcccagcccaagtatttattccgtgacacaataacgttgtatcagaaaaaaaacatgggcg
cagcttattcctagtaggtattcttactgcagtgcgcgcttaaagctactggaaacatgcgttccactatgcttgagaatcccctgcactggtaa
acgagagccgacgtgcttcaaggttgattttggttgcccctttggccttttggtcccaaaattgttccgacgtaattgaccccgtgttttgtcactttc
gagtgttccgactattgggggggcttttacgaataaaatattttttaagccgcctcccaaaa
ggagaatgtagagcggcggtttacgaataaaatattttttaagccgcgataattcattattact
```

Figure 34

h10.1
CCTCCTGAGAGTTCGCCGGCCCGGGGCCCAATGGGnTTGTTGTTCCAAGGGGTCATGCAGAAATACAGCAGCAGCTTGTTCAAG
ACCTCCCAGCTGGCGCCTGCGCGGACCCCTTGATAAAGGCCATCAAGGATGnCGATGAAGAGGCCTTGAAGACCATGATCAA
GGAAGGGAAGAATCTCGCAGAGCCCAACAAGGAGGGCTGGCTGCCGCTGCGAGCGCCGCATACTATGGCCAGGTGGGCT
GCCTGAAAGTCCTGCAGCGAGCGTACCCAGGGACCATCGACCAGCGCCACCCTGCAGGAGGAAACAGCCGTTTACTTGGCA
ACGTGCAGGGGCCACCTGGACTGTCTCCTGCTCACTGCTCCAAGCAGGGACGCGGGACATCTCCAACAAATCCCGAGA
GAnACCGCTCTACAAAGCCTGTGAGCGCAAGAACGCGGAAGCCGTGAAGATTCTTGGTGCAGCACAACGCAGACACCAAC
AACGCTGCAACCGGGCTG

h10.2
GTGCAGCTCTGCTCGCGGCTGAAGGAACACATCGACAGCTTTGAGGACTGGGCCGTCATCAAGGAGGAAGGCAGAACCTCC
AAGACCTCTGGCTCACCTTTGCCGACTGCGGGTTCGAAAGGCCATTGGGAAATACCGTATAAAACTCCTAGACACCTTGC
CGCTCCCAGGCAGGCTGATTAGATACCTGAAATACGAGAACACCCAGTAACTGGGCCACGCGGGAGAGAGGAGTAGCCCC
TCAGACTCTTCTTACTAAGTCTCAGGACGTCGGTGTTCCCAACTCCAAGGGGCCTGGTGACAGACGAGGCTGCCAGGCTG
CCTCCCTCTCAGCCTGGACAGCTACCAGGATCTCACTGGGTCTCAGGGCGTCGAGGAGAGAACAGAAT
GTGTCAAGGAGGAAGAATCATTTGTTTACAAACTGATGAGCAGCAGATCCCAGACCTTCCTTCAGGAATGGCAGAAACC
TCTATTCCTGGGGCCAGGGCAGAGCTTGAGGTGTTCTGGGGAAGGTGGTGCTCAGAGCCTTCCTGTGCCCCTCCACTTG
TTCTGGAAAACTCACCACTTGACTTCAGAGCTTTCTCTCCAAAGACTAAGATGAAGACGTGGCCCAAGGTAGGGGGTAGG
GGGAGCCCTGGGTCTTTGGAGGGCTTTGTTAAGTATTAATATAAATGTTACACATGTGAAAAAAAAA

Figure 35

TTGGAGAAGTGTGGTTGGTATTGGGGGCCAATGAATTGGGAAGATGCAGAGATGAAGCTGAAAGGGA

AACCAGATGGTTCTTTCCTGGTACGAGACAGTTCTGATCCTCGTTACATCCTGAGCCTCAGTTTCCG

ATCACAGGGTATCACCCACCACACTAGAATGGAGCACTACAGAGGAACCTTCAGCCTGTGGTGTCAT

CCCAAGTTTGAGGACCGCTGTCAATCTGTTGTAGAGTTTATTAAGAGAGCCATTATGCACTCCAAGA

ATGGAAAGTTTCTCTATTTCTTAAGATCCAGGGTTCCAGGACTGCCACCAACTCCTGTCCAGCTGCT

CTATCCAGTGTCCCGATTCAGCAATGTCAAATCCCTCCAGCACCTTTGCAGATTCCGGATACGACAG

CTCGTCAGGATAGATCACATCCCAGATCTCCCACTGCCTAAACCTCTGATCTCTTATATCCGAAAGT

TCTACTACTATGATCCTCAGGAAGAGGTATACCTGTCTCTAAAGGAAGCGCAGCGTCAGTTTCCAAA

CAGAAGCAAGAGGTGGAACCCTCCACGTAGCGAGGGGCTCCCTGCTGGTCACCACCAAGGGCATTTG

GTTGCCAAGCTCCAGCTTTGAagaaccaaattaagctaccatgaaaagaagaggaaaagtgagggaa

caggaaggttgggattctctgtgcagagactttggttccccacgcaagccctggggcttggaagaag

cacatgaccgtactctgcgtggggctccacctcacacccacccctgggcatcttaggactggagggg

ctccttggaaaactggaagaagtctcaacactgtttcttttca

Figure 36A

....LEKCGWYWGPMNWEDAEMKLKGKPDGSFLVRDSSDPRYILSLSFRSQGITHHTRMEHYRGTFSLWCHPKFEDRCQSV
VEFIKRAIMHSKINGKFLYFLRSRVPGLPPTPVQLYPVSRFSNVKSLQHLCRFRIRQLVRIDHIPDLPLPKPLISYIRKFY
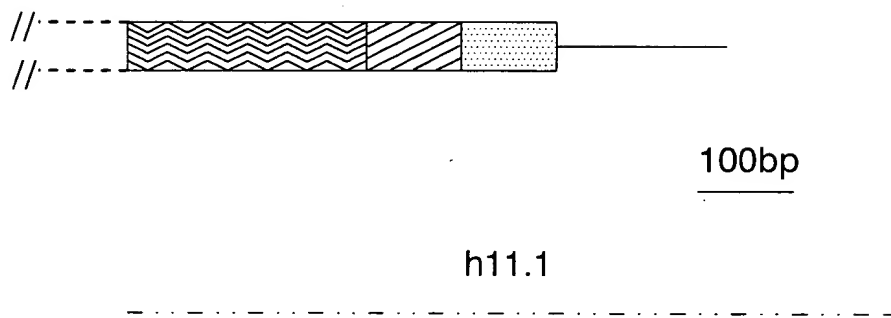YYDPQEEVYLSLKEAQRQFPNRSKRWNPPRSEGLPAGHHQGHLVAKLQL*

Figure 36B

100bp

h11.1

Figure 37
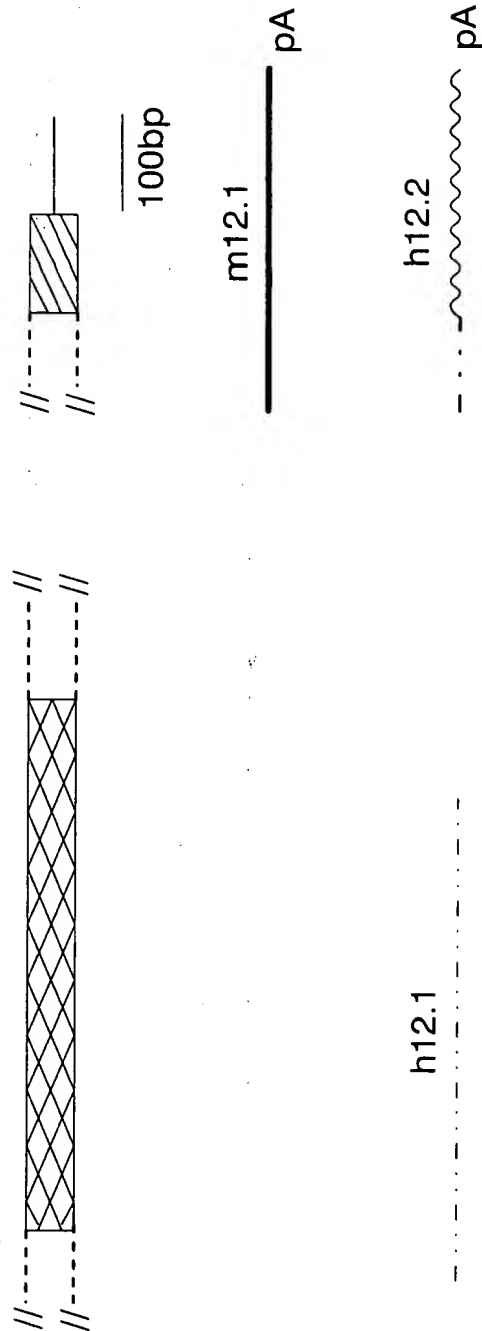
100bp

m12.1 pA

h12.2 pA

h12.1

Figure 38

GTTCCAAGCCTAACCCATCTTTGTCGTTTGGAAATTCGGGCCAGTCTAAAAGCAGAGCACCTTCACT
CTGACATTTTCATCCATCAGTTGCCACTTCCCAGAAGTCTGCAGAACTATTTGCTCTATGAAGAGGT
TTTAAGAATGAATGAGATTCTAGAACCAGCAGCTAATCAGGATGGAGAAACCAGCAAGGCCACCTGA
cacaggtcctttaattctgtttagtcacaaaagacggcttgtgtgactgtttggatttggtgatcaa
atgtccatgtttacagttgcttttcccagtttgtgtctttcccaatattgtgaaccttatccatctt
gccttactcagtttttatttctagtgcactttgttgtgtattatttgtttacctgaccattttctact
ttattctgctaataaactgtaattctgaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa

Figure 39

h12.1

GGGGATCGAAAGCGGGGGCTTCTGGGACGCAGCTCTGGAGACGCGGCCTCGGACCAGCCATTTCGGT
GTAGAAGTGGCAGCACGGCAGACTGGTCAAACAAATGGATTTTACAGAGGCTTACGCGGACACGTGC
TCTACAGTTGGACTTGCTGCCAGGGAAGGCAATGTTAAAGTCTTAAGGAAACTGCTCAAAAAGGGCC
GAAGTGTCGATGTTGCTGATAACAGGGGATGGATGCCAATTCATGAAGCAGCTTATCACAACTCTGT
AGAATGTTTGCAAATGTTAATTAATGCAGATTCATCTGAAAACTACATTAAGATGAAGACCTTTGAA
GGTTTCTGTGCTTTGCATCTCGCTGCAAGTCAAGGACATTGGAAAATCGTACAGATTCTTTTAGAAG
CTGGGGCAGATCCTAATGCAACTACTTTAGAAGAAACGACACCATTGTTTTTAGCTGTTGAAAATGG
ACAGATAGATGTGTTAAGGCTGTTGCTTCAACACGGAGCAAATGTTAATGGATCCCATTCTATGTGT
GGATGGAACTCCTTGCACCAGGCTTCTTTTCAGGAAAATGCTGAGATCATAAAATTGCTTCTTAGAA
AAGGAGCAAACAAGGAATGCCAGGATGACTTTGGAATCACACCTTTATTTGTGGCTGCTCAGTATGG
CCAAGCTAGAAAGCTTTGAAGCATACTTATTTCATCCGGGTGCAAATGTCAATTGTCAAGCCTTGGA
CAAAGCTACC

h12.2

CACAAATGGGACCATACAAAAATCTTGGACTTGTTAATAACCACTTACTAACCGGGACCTGTGACAC
TGGGCTAAACAAAGTAAGTCCCTGTTTACTCAGCAGTGTTTGGGGGACATGAAGGATTGCCTAGAAA
TATTACTCCGGAATGGTCTACAGCCCAGACGCCCAGGCGTGCCTTGTTTTTGGATTCAGTTCTCCTG
TGTGCATGGCTTTCCAAAAGGAGGTGGAGCTGTAGTTCTTTGGAATTGTGAACATTCTTTTGAAATA
TGGAGCCCAGATAAATGAACTTCATTTGGCATACTGCCTGAAGTACGAGAAGTTTTCGATATTTCGC
TACTTTTTGAGGAAAGGTTGCTCATTGGGACCATGGAACCATATATATGAATTTGTAAATCATGCAA
TTAAAGCACAAGCAAAATATAAGGAGTGGTTGCCACATCTTCTGGTTGCTGGATTTGACCCACTGAT
TCTACTGTGCAATTCTTGGATTGACTCAGTCAGCATTGACACCCTTATCTTCACTTTGGAGTTTACT
AATTGGAAGACACTTGCACCAGCTGTTGAAAGGATGCTCTCTGCTCGTGCCTCAAACGCTTGGATTC
TACAGCAACATATTGCCCACTGTTCCATCCCTGACCCATCTTTGTCGTTTGGAAATTCGGTCCAGTC
TAAAATCAGAACGTCTACGGTCTGACAGTTATATTAGTCAGCTGCCACTTCCCAGAAGCCTACATAA
TTATTTGCTCTATGAAGACGTTCTGAGGATGTATGAAGTTCCAGAACTGGCAGCTATTCAAGATGGA
TAAATCAGTGAAACTACTTAACACAGCTAATTTTTTTCTCTGAAAAATCATCGAGACAAAAGAGCCA
CAGAGTACAAGTTTTTATGATTTTATAGTCAAAAGATGATTATTGATTGTCAGATAGGTTAGGTTTT
GGGGGGCCAGTAGTTCAGTGAGAATGTTTATGTTTACAACTAGCCTTCCCAGTAAAAAAAAAAAAAA
AAAAAAAAAAAA

Figure 40

SOCS-13
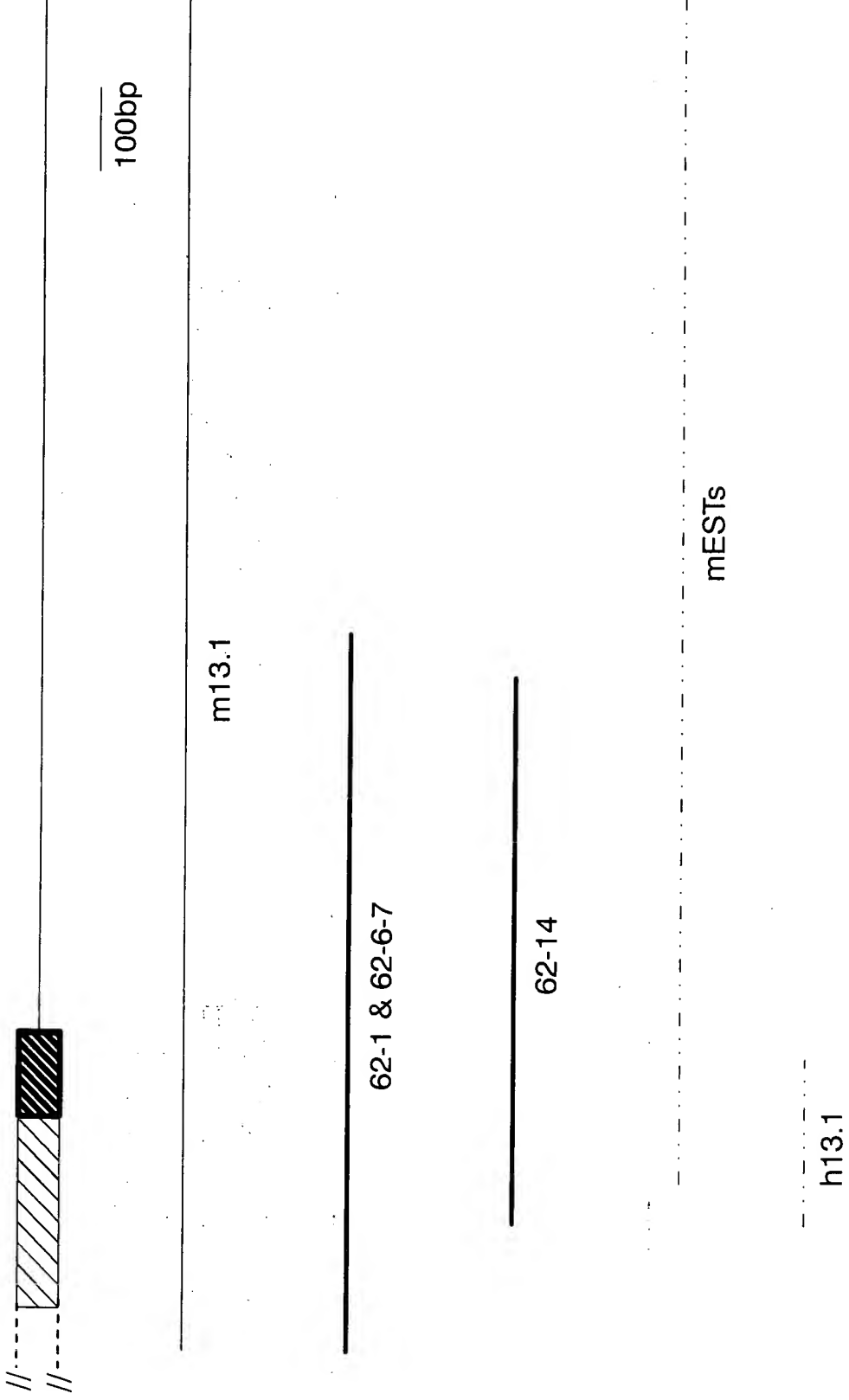

100bp

m13.1

62-1 & 62-6-7

62-14

mESTs

h13.1

Figure 41

CGGGGGGCTGGGACCTGGGGCGTAACCGTCTCTACCACGACGGCAAGAACCAGCCAAGTAAAACATA

CCCAGCCTTTCTGGAGCCGGACGAGACATTCATTGTCCCTGACTCCTTTTTCGTGGCCCTGGACATG

RATGATGGGACCTTAAGTTTCATCGTGGATGGACAGTACATGGGAGTGGCTTTCCGGGGACTCAAGG

GTAAAAAGCTGTATCCTGTAGTGAGTGCCGTCTGGGGCCACTGTGAGATCCGCATGCGCTACTTGAA

CGGACTTGATCCTGAGCCCCTGCCACTCATGGACCTGTGCCGGCGTTCGGTGCGCCTAGCGCTGGGA

AAAGAGCGCCTGGGTGCCATCCCCGCTCTGCCGCTACCTGCCTCCCTCAAAGCCTACCTCCTCTACC

AGTGAtccacatcccaggaccgccatacgacagccatctggtgccaartcactgagcccgttggggt

ccgccgacccctgcgcctgggatggaagcccacctcagccatgggcagacgtgccccctcatcctac

cggctgcctctgctgggggaacctatgccaacggacttctcccttcccaacactggctgaagcagca

gcacccaggcccttccctgaaccagatgcagagaataaactatgaaaacctctctcaggcgccttct

gctctcaggtggagtgggctgccccccactctctgcagagagaggctacacccacctgggggggtcct

gggaggtaagactagtaggaggtgccagggctgartccaaaagcaggaatggccaggamcaggccat

acagatgaagctcaggatgtcacataccatggacamtgagacagaaccccaggttggamttcccttg

ggccaacgagtgccagctttaatgtcagctgcmggtgctctgtggcctgtatttattctttaaacag

tagcaaaggccatttatttattccacttagaaaggaaaccttggtgggtggyttccctcgatgtgct

ttcccccacctccctggaatgtgtgtgccacacctgtccttgtcccaggccaggactgtggcacatg

agctggtgtgcacagatacacgtatgtcgtcgtgcatgaccccctgactagttcctaagtagccctgc

accaagcaccagagcagaccccaagagaggcccgtgcaagtccccatgtccccaggtccctgcttct

gttgccttgggactcatacaccggcacacgtgtttcagcctcttgacttccatgagcttcgaatttt

gcccccgattcttctgatatttcccattggcatcctccaaagctctgggcctggagggcattaggac

acatggaatgagtggggtctccagcccctgggaaagccactggcaaggcaggattagaaagaccaag

agcagggtggggcgccatgaagcctgtatgcctctcaggctcaagaccccgccacacacccactcaa

gcctcagaagtggtgtgtagggcagccccaggagaggaatgcctgtcctagcagcacgtacatggag

caccccacatgtgctccagccctctggctgtttctcttgctctagaatcaactccctacattgggaa

tgtagccatttggtagaggacttgcctagcctgcaggaagctcacgttccatcccctgcaccaagga

gaatcaaagctcaggaggctgaggcaggaggattgctgtcagtggtgtacagaggtcatggccatcc

tgggctatattaaaccttgtcctttaagaaaaagaaaagaaatcaacttccattgaatctgagttct

gctcatttctgcacaggtacaatagatgacttkatttgttgaaaaatgkttaatatatttacmtata

tatatatttgtaagaagcatt

Figure 42A

....GGWDLGRNRLYHDGKNQPSKTYPAFLEPDETFIVPDSFFVALDMXDGTLSFIVDGQYMGVAFRGLKGKKLYPVVSAV
WGHCEIRMRYLNGLDPEPLPLMDLCRRSVRLALGKERLGAIPALPLPASLKAYLLYQ*

Figure 42B

```
AAGGGTAAAAAACTGTATCCTGTAGTGAGTGCCGTCTGGGGCCACTGTNAGATCCGAATGCGCTACT
TGAACGGACTCGATCCCGAGACNTGCCGCTCATGGATTTGTGCCGTCGCTCGGTGCGCCTGGCCCTG
GGGAGGGAGCGCCTGGGGGAGAACCANCACCTGCCGCTGCCGGCTTCCCTCAAGGCCTACCTCCTCT
ACCAGTGACGTTCGCCATCATACCGCCAGCGCGACAGCCACCTGGTGCCAACTCACTGAGCCGCCTG
```
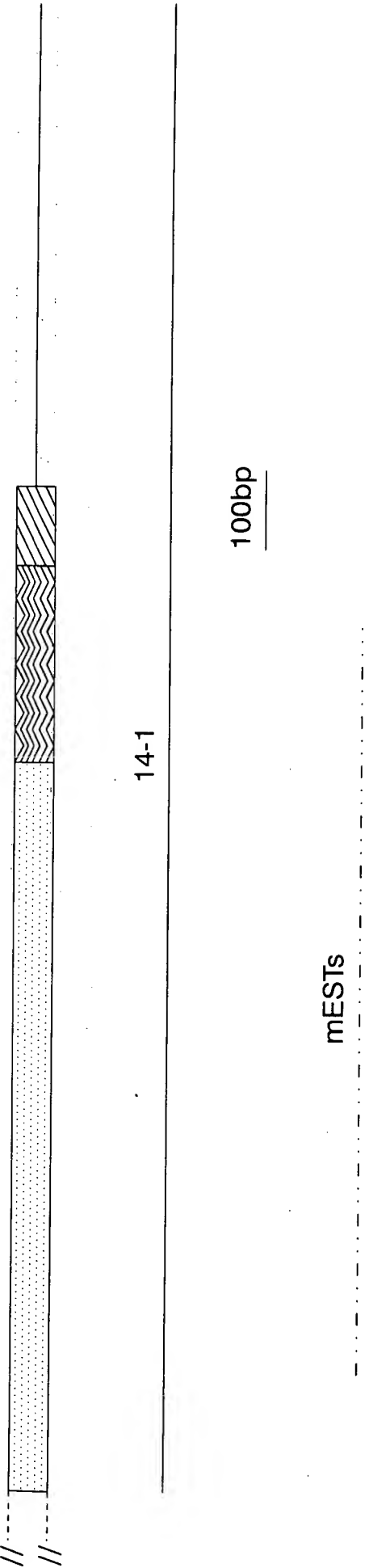
Figure 43

14-1

100bp

mESTs

Figure 44

...AAGTGGCGGCGGTCCCTGGAGAGCAGGCAGGCGGAGGCAGCCGGCGGCGGGCGGGGGGCTGACAGCCAGGCCT
CCGCCTGGCGGGGAGCCGCCGCACGAGGAGCCGGCGGCCTTCTCTTCCGCGCTTGAGCGAGCCGGGGCTGATGGCGGTGGTGATGGCGGCAGGC
GCTCGGACAGCTCCGCTTGAGCTGAGCTCGGAGAGATCCGTCCGAGAAGTGCCCAGAGAAGCAAACTTCCTCTTAGAAAAGCTGAAAAACACARTATTT
ATAACACTGGAAATTGTAAAGAATTTGTTTAAAGAATTGCTGAAAACAATAGTAAAAATGTAGATGTACGGCCTAAAACAAGTCGGAGTCGAAGTGCT
GACAGGAAGGATGGTTATGTGTGGAGTGGAAAGAAGTTGTCTTGGTCCAAAAGAGAGTGAGAGTTGTTCTGAATCTGAAGCCATAGGTACTGTTGAG
AATGTTGAAATTCCTCTAAGAAGCCAAGAAGGCAGCTTAGCTGTTCGTTCGTCCATTGAGTTGACTTAGATCATTCCTGTGTGGGGCATAGATTTTTAGGC
CGATCCCTTAAACAGAAACTGCAAGATGCGGTGGGGCAGTGTTTTTCCAACCTCGCTCAGATTTAGCCTTTAGGTGGCCGACACTCTCCAGGGCTTCCATCTAAAAGA
AAGATTCATATCAGTGAACTCATGTTAGATAAGTGCCCTTTCCCACCTGTCTCTGAGAGGAAAACTGAGAGATGCTCAGCTGAAACAGAAGAGATGAC
CCTATGAGTCCCAACTCAGATGAATGGGTGAGTGAGTTGCAGACCTGTCTCGTGTACAGTGCTTCGTTCGTGCTCAAACTGTTCTATGATGAAC
ATACCCTGTTTCTCACATACCAATGGCCAGCCTTGTCATAACTGCCAACAGTGCTGTGCACAGTGAAATTATAACGCTGTGCAAAAGGAATAAGCCCAGG
TTGGTCACAAACAACAGCATAGAAGACAGTGACATGAGTTCAGAGGATGAAATTCAGAGGATGAAATTATAACGCTGTGCAAGCTCCAGAAAAAGGAATAAGCCCAGG
TGGGAAATGGAAGAGAGGAGATCCTGCAGTTGGAGGCACCTCTAAGTTCCACACCCAGAGTTCCACACTACGTCCACTACGTCCTGTTCCAGACCTCCTTCAG
ATCAGTAACAATCCGTGCTACTGGGGTGTCATGGGGTGTCATGGACAAAATATGCAGCCGAAGCTCGTCGCTGGAAGGAAAGCCAGAGGGCACCTTTTTACTTCGAGAT
TCAGCGCAGGAAGATTATTTATTCTCTGTTAGTTTTAGACGCTACAGTCGTTCTCTTCATGCTAGAATTGAGCAGTGGAATCATAACTTTAGCTTTT
GATGCCCATGATCCTTGTGTCTTCTTCCATTCTCCTGATATTACTGGGCTCCTGGAACACTATAAGGACCCCAGTGCCTGTATGTTCTTTGAGCCGCTC
TTGTTCCACTCCCTTAATCCGGACGTTCCCCTTTTCCTTGCAGCATATTTGTAATTGTGTAATTGTGTAATTGTGTAATGTTTACGATGGCATCGATGCC
CTTCCCATTCCTTCGCCTATGAAATTGTATCTGAAGGAATACCATTATAAATCAAAAGTTAGGTTACTCAGGATTGATGTGCCAGAGCAGCAGTGA
tgcggagaggttagaatgtcgacctgcatacatatttcatttaatatttcattttctctatgcctcttgaatttttgtacaaaggcagttgaat
caaataaaactgtgccctaagttgtttaattccagatcaatttattttttatgatacacttgttatacacttgttataatttttaagcaggtgttggttttgttt
ttaccatataaattacatatggtccaggcatattttcaaggcattgcattcaatttttaaataatctttgt
tctttcctatgtgtgaaatatttgctaatctatgctatcagtattcttgtatgaccgaatagtactacctgtattactcttgaagatttca
gtaaagagtgttgtaatcaatccattataatgtaattgacttttgtaattgccaataggagtgttaaacaacaaaatgattaaaatgaaactta
atgtatttcatttaaatattaactaaacaagttgtttagttagtatcctagccaataagacatcctagaggtgtatttg
ttctgcagttggcaggaccgtcagttagtccaaataaacatccccctcagcgtggaggcgaatgggaacctgtgctcctttcacgggaagcttg
caaagcaaaatagcaggttacaagcttggagttgttaaggcaactagagtttttctcttattaatttatagactgttgttgcacctacttagctctt
tttgggaactctagttcccagggaaaatacacctcgtgcc

....SGGGPWRAGGGSGKSDSGLTVEPGRGLTARPPPGGSRTRSGSGRASLPRLSERRVMAVVMAAGARTAPLELSSERS
VQKVPRRNFLLEKLKNTXFITLEIVKNLFKMAENNSKNVDVRPKTSRSRSADRKDGYVWSGKKLSWSKKSESCSESEAIG
TVENVEIPLRSQERQLSCSSIELDLDHSCGHRFLGRSLKQKLQDAVGQCFPIKNCSGRHSPGLPSKRKIHISELMLDKCP
FPPRSDLAFRWHFIKRHTVPMSPNSDEWVSADLSERKLRDAQLKRRNTEDDIPCFSHTNGQPCVITANSASCTGGHITGS
MMNLVTNNSIEDSDMDSEDEIITLCTSSRKRNKPRWEMEEILQLEAPPKFHTQIDYVHCLVPDLLQISNNPCYWGVMDK
YAAEALLEGKPEGTFLLRDSAQEDYLFSVSFRRYSRSLHARIEQWNHNFSFDAHDPCVFHSPDITGLLEHYKDPSACMFF
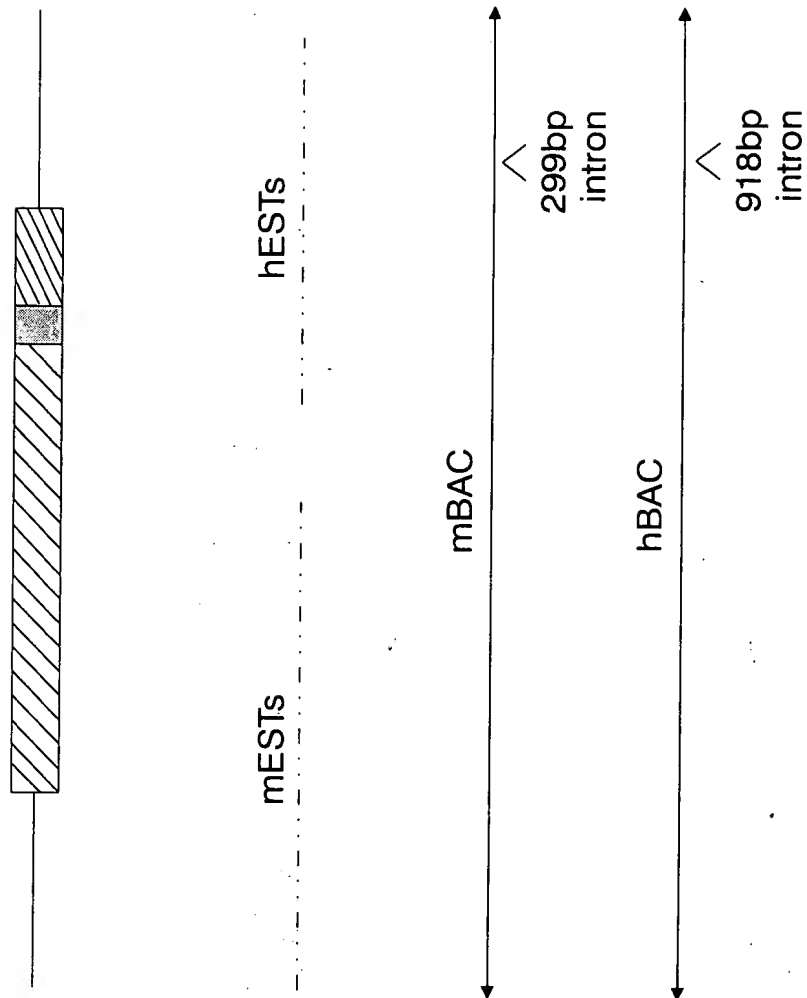EPLLSTPLIRTFPFSLQHICRTVICNCTTYDGIDALPIPSPMKLYLKEYHYKSKVRLLRIDVPEQQ*

Figure 45B

hESTs

mESTs

mBAC

299bp
intron

hBAC

918bp
intron

Figure 46

ccctctgggcaagccgcccccccccaccatctaccacacacacacacacacacattcagacccttgggg

caaaaacaaagcaaaataacacacaaaaacactgcctgtggaaagtcctfacttcaggaaggttggcagatgagagagc

aagggaacatttatcaggactgccacaaggagtcttttttttttaatgttttcaagacaggtttctctgtatagcc

ctggctgtcctggagctcactttgtagaccaggctggcctcgaactcagaaattcgcctgcctcctgagtgctg

ggattaaaggcgtgcagcaccatgtccaactgccatttctccattaaggttcgttcctttcagataactctaggttctg

ggtcaagctgacacaaggctacacagcacagtttgtatgccacattcagttcagttcagagacacccaacctccctggaactgg

aacttatgcacatttgtgagcttccacttgggagtgggaacctgacctgcctctgcaagagcagccgtgtctcttaac

tgctgagccattcagcagcctcacatcagaattaagttaaaattagccgggtatgaatcataccctagaatcctagca

tctgaaagcagagctaagagaaacagggattcaagaccagctcttggctacagagcccgtcctgtcctaggatgggctac

aagagactatttcaaagccatccaaacaatcaacaatacaacaagttaaaattaggctgggcacagggtacac

acctttaatgccaacactcaggaggcagaggcaggctgatcagtctctctctctfttttgggataaggtttctgtctagcctgcatagattcactc

ctaggccagcagaggttacagtctctctctctfttttgggatttttctgtctcccagtgctggattataggtgttgcaccacc

cacacacacacacgggtggcattatggagatccgcctgcctctgaactgttatcaagaggctttcgaggaggtcaaacttcaacagcaacctctccat

tgtagactaggctagcctgaactcagagatccgcctgcctctgaactgttatcaagaggctttcgaggaggtcaaacttcaacagcaacctctccat

actgccagccactttggatttttgaactgttatcaagacactcaaaacttaaacccttaaagcacacatccaccagacagcgtgcccactcgta

gataatgtagctaatgatcaaacgacactcaaaacttaaaccctfaaagcacacatccaccagacagcgtgcccactcgta

A– – – – – – – – – – – – – – – – – –A

Figure 47A(i)

A

gttccattactcaggaggctgaagcaggaggatgaaggacttcagcaacctaggggagccgcaggggacagtagt
ctcaatccctacattcctgaacacaggagcaggagttcaggaaggtgtcaaggccgcttactgatcttaggcctca
ggaatgactagctcaggcagagagagcaaagtctccagtggagaagtctacacacacacacacacacacacacac
acacacacagaatccaaggcgtcatcaaagggttaattctagtctggatggggggaggggtggggcacgca
gctgtcaggtggctttggaaaataaactgctgaagagtcctgacgccaggggtcctgggaggacaagaggttacccac
tcaaagagtgtgctccacaaagcatgcgcgccttgtccacgtctcggagtcgtcgggaggtgacacttatttttgctgattcttttgtag
ccggtgggttctcaaggcggtaagtggtgtggccgccgtgtggagccgaagcagtgaggtgctggtcagggggcttctagccttccc
aggggcggagcgcgggggctccgcagcccgtctggagccgaagcagtgaggtgcggggtaggggcccggcgttagagccagcaa
tatctgtacttccacagaggtctctgcgagctaggggagagagagctcctgagaaacttggggggcgcgacacagataggggtgaaagca
ggggacggttcacggtaggtctgaggtggttaggggaccaaggaagaccaggctggttggcatacaccggtgaacggatgggggtcct
gagtgatagacctgggatggttaggggttaggggacctaacagtcctttctgtctccacaccactccagggacgatccggagctcaacttcaaaagc
agggaaagatgatgcgcctaacagtcgtttgagaagttcttcagcggctctcctcATGGGCCAGCCCTGGCAAGGGCAGCA
GCAGCACCCCTACCTCGCAGGCTCTGTACTCGGACTTCTCTCCCCGAGGCTTGGAGGAGCTCCTGCTCTCCCCCT
CCTGACCTGGTTGCCCAAGCGGCACCACGGGTCTCCGGAACCCCAAGGATTGCTCCGAGAACATCGATGTCAAGGAAGGGGGTCT

B

Figure 47A(ii)

B

--- --- --- --- --- --- --- --- B

GTGCTTTGAGCGGCGCCCTGTGCCCAGAGCACTGATGGAGTCCGGGGGAAACGGGGCTATTCGAGAGGTCTCGCACGCCT

GGGAGATCAGCTGGCCCCTGGAGCAAAGGGGCACACACGCCGTGGTGGGCGTGGCCACCGCCCTCGCCCGCCTGCGCAGGCT

GACCACTATGCGGCGCTTTTGGGCAGCAACAGCGAGTCCTGGGGCTGGGATATTGGGCGGGGAAAATTGTATCATCAGAG

TAAGGGCCTCGAGGCCCCCAGTATCCAGCTGGACCTCAGGGTGAGCAGCTAGTGGTGCCAGAGAGACTGCTGGTGGTTC

TGGACATGGAGGAGGGGGACTCTTGGCTACTCTTATTGGGGGCACGTACCTGGGACCCAGCCTTCCGTGGACTGAAGGGGÀGG

ACCCTCTATCCCTCTGTAAGTGCTGTTTGGGGCCCAGTGCCCAGTCCGCATCCGCTACATGGGCGAAAGAAGAGgtgagat

acggactaggtgtggggagatcactactcttggcaatggtttgggctggaaactcatggttggagcacaggaagtaggct

tcttgtcactttggcctgtcacttagatggccttggatctagcttcactcccaatccctattgatggtgatgcacaaatt

cagagcctttgggtctccctcagctggcggtgcggtggaaatggaggaagaggtgcctgagcaggatctcaagt

tcaaggatgcctgagttgctgcttacctgtcttcctttctctccgcagTGGAGGAACCACAATCCCTTCTGCACCT

GAGCCGCCTGTGTGCCCATGCTCTCGGGGACACCCGGCTGGTCAAATATCCACTCTGCCTTTGCCCCCTGCCATGA

AGCGGCTATCTGCTCTACAAATGAcccagtagtacagggtgtgctggcaccctaccgtggggacaggtggagaggcacccg

ctggcctagacaactttaaaaagctggtgaagctgggggggggggctgaaccccttcacctccccttctcacaggagca

agacatatagaaatgatattaaacaccatggcagcctgggacaaagaggtttttgaagtaaaaaatgagatgtattgtca

caacctgtttcattattgtttttgtttttacactccccaccccaggctagagctagatggtttcacttcactacttgtctttaaggaat

tatgacaacccacaaagctcaggcccaggtgtttattccctacatgtaggatggttcacaaacaatacagggggctt

tggcaccgtgggggaggggactatcccaggcctcttaggtctcatgtataccgaattcagaccccgaaagctctgaattt

--- --- --- --- --- --- --- --- C

Figure 47A(iii)

C — — — — — — — — — — C

ctgcatcagacatccagtagaacttgggagtgaagctagagcaggccatctaagtgacaggccaaagtgacacgaagc

ccacttcctgtgtccaaccatgagttccagcccaaaccaatggaaggtgattcacttgtcaggcccaaaggacag

tcagttctactccctccctcactaggagccaccttggtgacagttgattctcaccactgtaagtggtaaagggattggc

ctggtcccaaccataataggcggtggaaacggctcaggagggtacagcgtggattagccacaagatggggcagatgat

gtcatcagaagcatgtgaccggtgggagcagttactaaacttctgggcaacctagtccatgctatgcaggcaggtagagg

gatgggcagtgtgtcattgtttggcattgatgtgtccacaaattcaggcttgagagatgcgcaccccacaaggaagccgt

ccacgtcaggctggcttgccagctctttgcaggttgctgccagtcacagaacctgtaccaggaacaagaagacagtttggt

caggtctatgatcagaacacttaagcccaccctctgtgcaggcagcctcagtctgtgtctttagccattccgtcttag

ctagagccaaagccactcactcctccataaatgatccggtgctgctgagcaggaggaggagagctactaagtaagctcctt cctatctatcattca

cccggagcttctcgtgtacttcctgtgcctagacatagagttgagtttccagaaaagcccggaccagagtggcaaggctccaatc

aggagtaaaaccactggttctcacatagagttggcaaagacattttggcaaagtcactctcttggtgagtttggggcccctgtctctaaagggctt

ccaccaggcttggaatgaacatagctgtgtgagtctgttaaagccggacaggctgaggagctctgggtagttacctgctgaggggttgc

ggatgggctccatagctgtgtgagtctgttaaagccggacaggctgaggagctctgggtagttacctgctgaggggttgc

cgtcttgccagtcccacacaggttcataggccaggaccacccttgctcctgctcctcaggccaggaccacccttgctcctgctcttcacattatctgtgggc

agagagagagtgagtaggaggaggagctgacccgccaagc]

Figure 47A(iv)

MGQTALARGSSSTPTSQALYSDFSPPEGLEELLSAPPPDLVAQRHHGWNPKDCSENIDVKEGGLCFERRPVAQSTDGVRGK

RGYSRGLHAWEISWPLEQRGTHAVVGVATALAPLQADHYAALLGSNSESWGWDIGRGKLYHQSKGLEAPQYPAGPQGEQLV

VPERLLVVLDMEEGTLGYSIGGTYLGPAFRGLKGRTLYPSVSAVWGQCQVRIRYMGERRVEEPOSLLHLSRLCVRHALGDT

RLGQISTLPLPPAMKRYLLYK

Figure 47B

gtactttcttatatctccataatttattactattactacatgatacattatttatataagtctttgtaacctcctt

aaggattcactgcttaatctccagtgcttagcacaaatcattaaatgcgaaccagaaactcttccaaatgtgttacatct

ataacctcattggattctcactaccaacccatgcaatagatactaatgtgatctctgtcttacagaggagaaacaggc

acaggaggttcagtaatttgcccaaggtcatacacacactggccttcaggtattcatgcccggggagtctggtcccaca

gctggcatgtgttgccattattatattgctcccttatagtgtcggcactcattgacacattgacagctatgcttggtg

agtgactactatgtaccagctctgtgctacatgctttacctggattattcaacactgcacaacaccctgtgaggtaact

accatcattgctcctatttacataacagaaactacagaaatctggggctgggcgtagtggctcacacctgtaatctcca

gcactttgggagaccctgtctctaaaaaaattttttttgccgacgtggtggctccacacctgtaatctcagcacttt

gggaggctaaggcaggcagatcacaaggtcaggagttctagaccagcctggccaacatgtgcaaaacccctgtctactaa

aaatacaaaaaatagctaggcgtggtggcaggcgcctgtaatcccagctactcaggaggctgaggcaggagaatcccctg

aacctgggagatgggaggttacagagagccgagatcgtgccgagatcgtgccactccagcctgggcaacaagagcaagactctgtct

cgaaaaaataaataaaataaaatattttttaaaaattagctgggtgtgtagcacatgcctgtagtcccagcta

cttgggaggctgaggtgaggaggatcacttgagcccaggaggtcaaggctgcagtggctgtgatggcgccactct

agccttggtgacagacaagacccctgtctcaaaaaaaaaagagaaatcgggcaacttcccccagatcgcgcagttaac

tagtggcatagcttcactcaaactcgaagtcttaatcaggacactctaccaaatgagatcaacgggctcagtaatggattg

A —— —— —— —— —— —— —— A

Figure 48A(i)

A — — — — — — — — — A

gcatccagtatgaagactggaccagcaggagaactatgatgtgctacagccctagagcctgaagcagcagattcacagcctca

gaggtggcacaggctgactcacaaccgggcagaaaggaccagccagaaacagtgaccctcccatgctcctcacccttacccctcaggggcgcaggagttagtcgctcaggc

aaatgggattcggcacaatgaagcccctcctttgacccctcccatgctcctcacccttacccctcagggcgcaggagttagtcgctcaggc

ggctcaaaggtcttgacggtggagaacaccatcccaggattcccgacgcggtgatgcatcaaagcgttaattctgag

atgggcctgcccgggtgcggactctgccgcaagagagaggttaactgccccgggcct

cggggaggtcacagcccgggactgagacccgggtaactgccccgggtggctccacggggcggggcatgctctccg

cggctgctgccggtatagagcggtaactgccccagggtggctccacggggcggggcatgctcgcacggcc

gtgggcggcgatgagagggtaagcccgggacgggctcggcccaagggaggag

ctggggcggaagcgcggcgcctgcgcctcggcctcttctcccgcctccttcagaggcccggcgac

ctccagggctgggaagtcaaccgaggttcggggcagcgcgaggctccggcgagtaaggggatggtccatgctgag

gcccaaaatgggcggaactcgcgagagtcctggcgacctggatcagatggggcgaggcgagatgaagggcccaggagctt

tgggcagcgaggaggaggagcgggccgttgcaaactgggtgaaagatgggtgtacctgggtgacgagcccccgcc

aggattctgctcttcacgcccctttctcccagctccctctagctcctcacctccCATGGGCCCAGACAGCTCTGGCAGGGGCAGCA

agacgcccagcaagcctctttcggggagtcctctagctcctcacctccCATGGGCCCAGACAGCTCTGGCAGGGGCAGCA

B — — — — — — — — — B

Figure 48A(ii)

B ------- B

GCAGCACCCCCACGCCACAGGCCCTGTACCCTGACCCTCCTGTCCCGAGGGCTTGGAAGAGCTGCTGTCTGCACCCCT

CCTGACCTGGGGGGCCCAGCGGGCGCCACGGTTGGAACCCCAAAGACTGTTCAGAGAACATCGAGGTCAAGGAAGGAGGGTT

GTACTTTGAGCGGCGGGCGCCGTGGCCCAGAGCACTGATGGGCCCGGGTAAGAGGGGCTATTCAAGGGGCCTGCACGCCT

GGGAGATCAGCTGGCCCCTAGAGCAGAGGGCACGCGCCATGCCGTGGTGGGCGTGGGCCCCTCGCCCCCGCTGCAGACT

GACCACTACGCGGCGCTGCTGGGCAGCAACAGCGAGTCGTGGGGGCTGGGACATCGGGCGGGGGGAAGCTGTACCATCAGAG

CAAGGGGCCCGGAGCCCCCCAGTATCCAGCGGGAACTCAGGGTGCCAGCTGGAGGTGCCAGCATTCCGCGACTGAAGGGCAGG

TGGACATGGAGGAGGAACTCTGGGCTACGCTATTGGGGGCCTACGCTGCTTCTGGGGCCAGTAAGCGCTGTCTGGGGCCAGTTGCTGGGCCAGTTGCTGG

ACCCCTCTATCCGGCAGTAAGCGCTGTCTGGGGCCAGTGCCGCCAGTGCCGCCAGTCCGGCCATCCGCTACCTGGGCGAAAGGAGAGAGGtgaggc

ctggggcagacgtgggggagaacttttctgtccctggtggcagtggttgggatggaaactctttctgacaagagcagagggg

atggaccttcatccagctgcctgctccaacctctgttcagtgctgggaaaggctaggggtcttcacagctgttatttaattta

acccaacagcaatagaggtgaaacaggcttgagaaagcaacttctcttggccagtaaatggtgaacctta

gaatggaggggaggaactgcagggatgagagaattcaggagatcaaccctgagcagaggtgcaaagcgttaggtact

gggtttgatgtacaggtccaaagaagaaggatgggcagagccaggtaccagcgtatacccggattccctggctctaacc

tgtctctgtgccacatacctactccttccttctcagccacacctctgatggagacactgggggcctgggcaccaggggaga

C ------- C

Figure 48A(iii)

C -- -- -- -- -- -- -- -- C

gtcaaagcctgggccagctccaccactgtcagagccaccttggcctcttgcctgttgttgttagagggcctttagccagctcttcacccc

cagctctgactaggatgtgtgtgaaatcttatctgggaggcagaacttccgggtatctcaaattccccttcagccaggtg

ggcacactcgaagcaggaagcagaaaggcatctgagtaggacccgtagtttgaggacatctggctggctgcacccc

atacttacattcccctccttctctcccagCGGAGCCACACTCCCTTCTGCACCTGAGCCGCCTGTGTGCGCCACAA

CCTGGGGGATACCCGGCTCGGCCAGGTGTCTGCCCTGCCCTGCCCCCTGCCCATGÄAGCGCTACCTGCTCTACCAGTGAg

ccctgtgataccacagactgtgctgaggtcttgccaccacccctcccctgggaggtgggggaggcactgctggcctaga

ccagctgctgaaagctgtggtgaggctgagccctacccccaaccaagctctgcggaaatcaacagcccccagagccacttgg

agggaggaagaaagggagccggcgttcaaggctatgacagtctgctacgcaaaacatttttcaagtaaaaatagtaaga

gatgtgttatagaaacctgttctgtttttttttcttgcacaaatgatcattatatagctgcctcaaaaggaa

gattatctgggcaagtccagtgaaggcagcagacaaaccacagaccagtgccagtttattccctcacatgggtggttcac

atacacagacagaggcacgggccaccatgggaggcagcactcctgccttctgaggggatcttggcctcacggtgtaa

gaagggaggaggatggtttctcttctgccctcactagggcctactggttagttccaaccattataagtggagaagggattggcctggtcccaac

tcagccaaggagaagccaccttggtgacgttagttccaaccattataagtggagaagggattggcctggtcccaac

D -- -- -- -- -- -- -- -- D

Figure 48A(iv)

D ‐ ‐ ‐ ‐ ‐ ‐ ‐ ‐ ‐ ‐ ‐ ‐ ‐ D

cattacacaggtgaagataaacagtaaagaagatacagtttggatgaggccacaggaagagcagatgacaccatcag

aagcatatgcaggaaagggcagttactggcttctggctgcttagtccctgcttggcaggaagggtaggagagatgg

atgggctcattgtttggcattgatgatgtccacgaattcgggcttgagggagcaccaccacaaggaagccatccaca

tcaggctgctggccagctccttgcaggttgcccagtcacagagcctgggaaggagcagaacaagggcttggtcaaga

atgggatgagtctgccccatcccacctccatgtccgagggctcagtcctagtcctcagcccactcccacctccctcgggaa

ccaaagccactcacctccataaatgatacgggtgtctgagccaccgcatcagagacgttggacttcagcccatcctccgga

gcttctcgtgtacttcctgggcctagaacaagaagctggcctaagtaagaccttttctgcctctctaagaggaaaaatca

ctggcaccagtggacacttagtgtgtttctgactgagtcagagtaccaggctctgatccaagccagcccctggactgg

atgcccttggacaagtcactgtctctgggttcaaggtctcggggatgaggcaggtcctgggcccggttacctgttgggggtgttgcagtcttgc

ctgtccaaacctattgaggcgaggctcataggccaggacgacctgctcctgcagtcctcacgttatctgcagggcagagatac

cagtaccaatggcccacacaggctcccaggttctccggagtacgaagaagaacgcctactgcccccct

agtggacattggggg

MGQTALAGGSSSTPTPQALYPDLSCPEGLEELLSAPPPDLGAQRRHGWNPKDCSENIEVKEGGLYFERRPVAQSTDGARGK
RGYSRGLHAWEISWPLEQRGTHAVVGVATALAPLQTDHYAALLGSNSESWGWDIGRGKLYHQSKGPGAPQYPAGTQGEQLE
VPERLLVVLDMEEGTLGYAIGGTYLGPAFRGLKGRTLYPAVSAVWGQCQVRIRYLGERRAEPHSLLHISRLCVRHNLGDTR
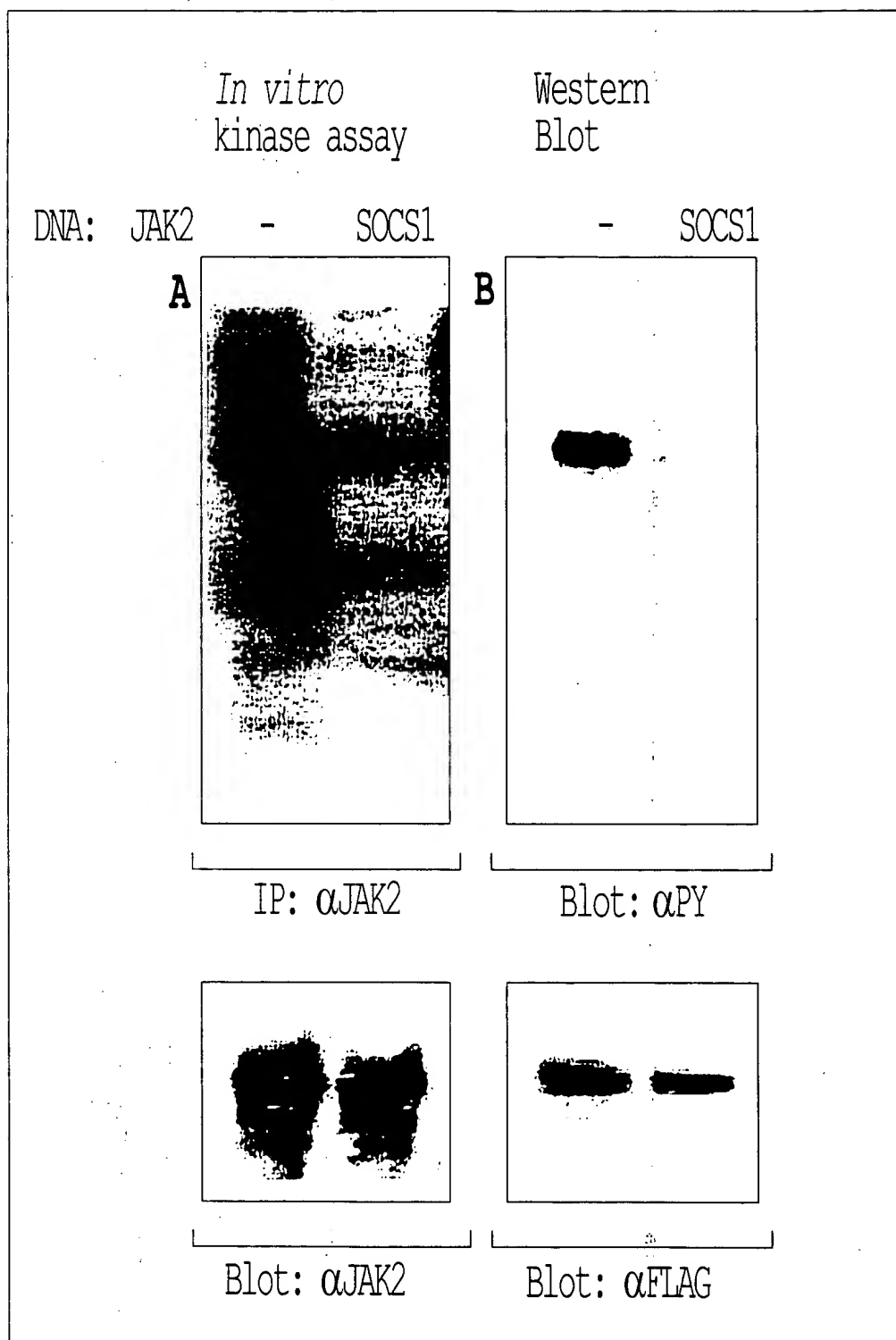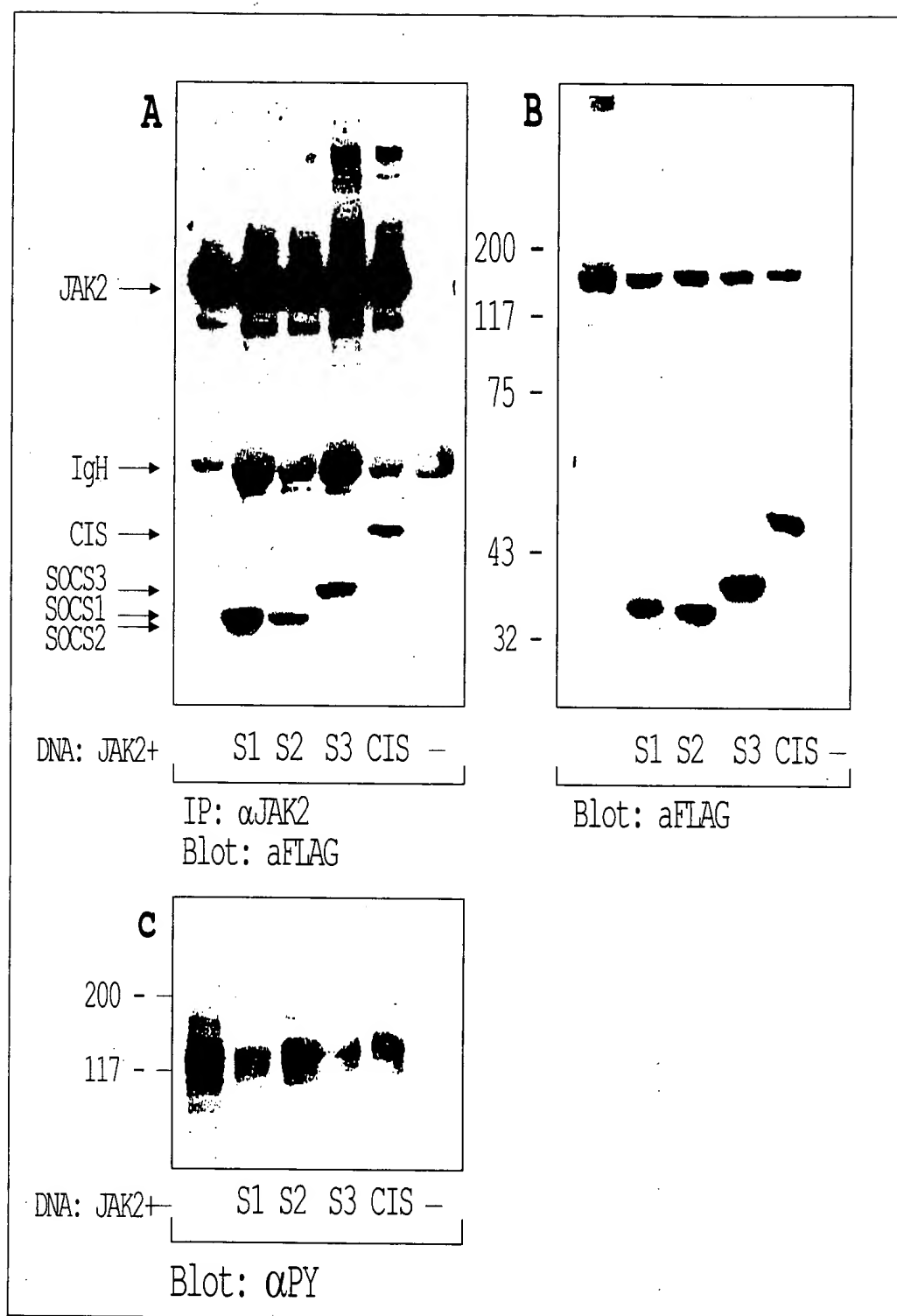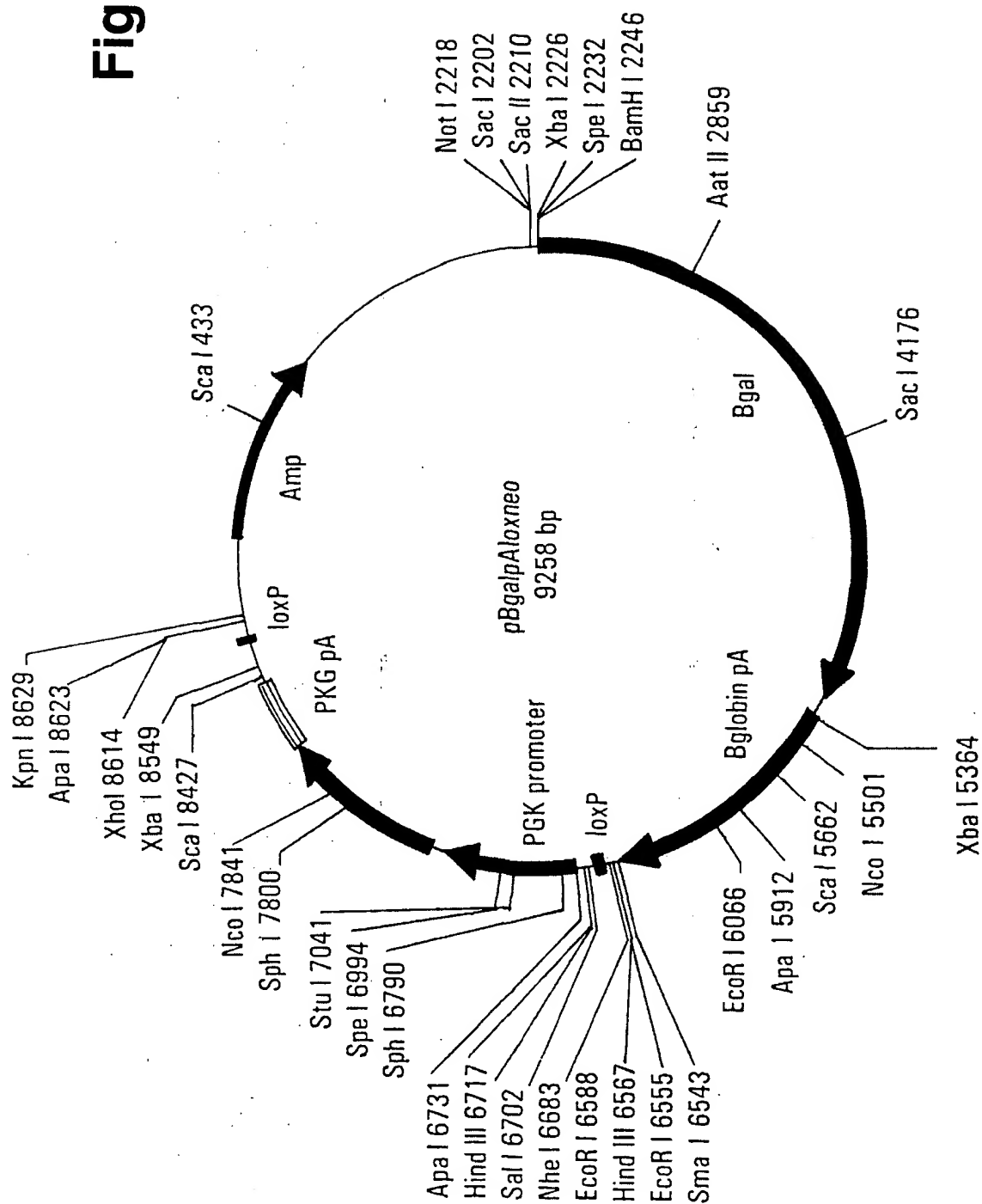LGQVSALPLPPAMKRYLLYQ
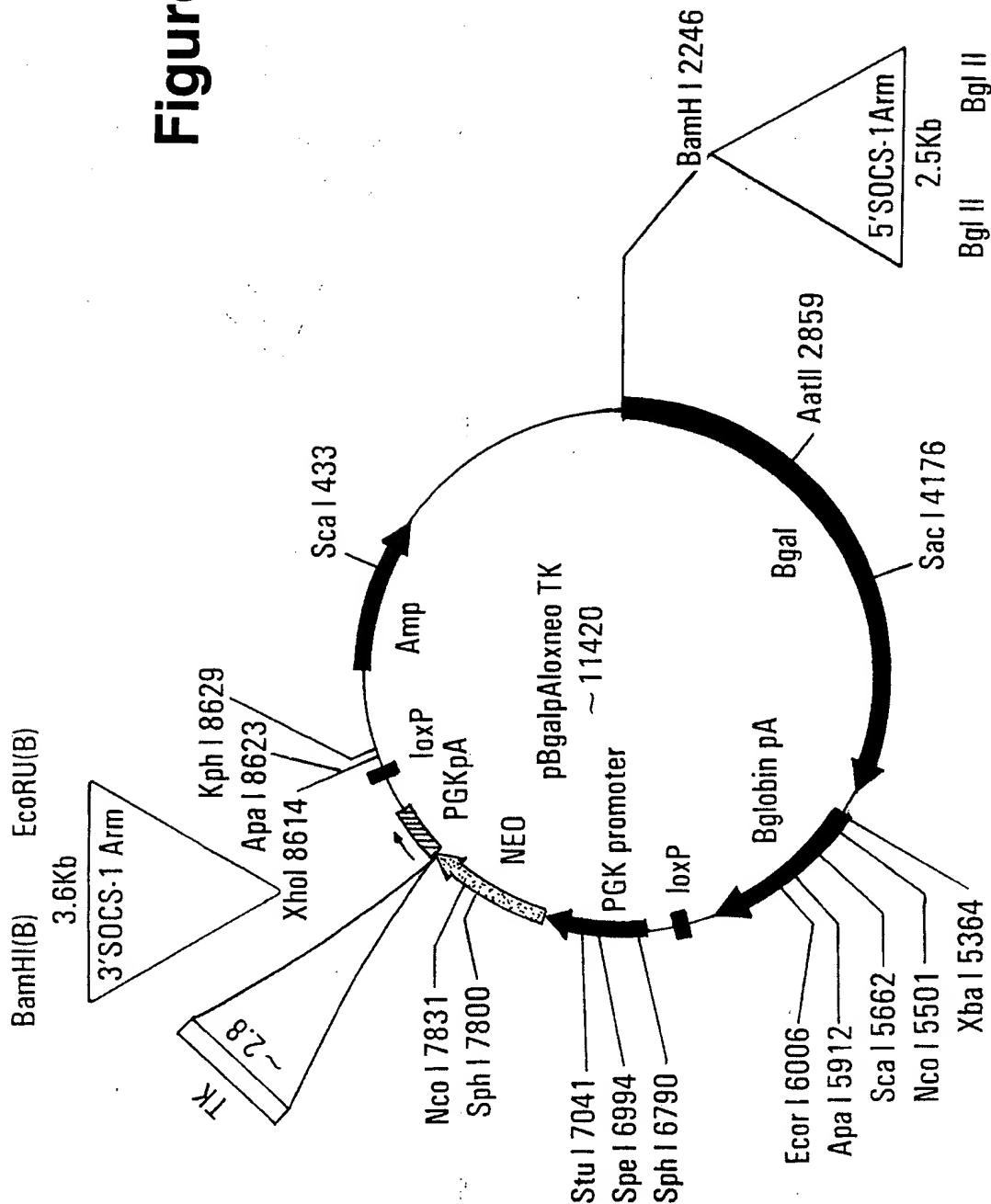
Figure 48B

Figure 49

Figure 50

Figure 51

Not I 2218
Sac I 2202
Sac II 2210
Xba I 2226
Spe I 2232
BamH I 2246

Aat II 2859

Sca I 433

Amp

pBgalpAloxneo
9258 bp

Bgal

Sac I 4176

loxP

PKG pA

PGK promoter

Bglobin pA

loxP

Xba I 5364

Nco I 5501

Sca I 5662

Apa I 5912

EcoR I 6066

Kpn I 8629
Apa I 8623

Xhol 8614
Xba I 8549

Sca I 8427

Nco I 7841
Sph I 7800

Stu I 7041
Spe I 6994
Sph I 6790

Apa I 6731
Hind III 6717
Sal I 6702
Nhe I 6683
EcoR I 6588
Hind III 6567
EcoR I 6555
Sma I 6543

Figure 52

5'x3' SOCS-1 Arms in pBgalpAloxNeoTK

SOCS-1 Knockout Construct

Sac 1 Not
Sac II / Xho Spe

AMP

Apa I

Kpn I

M13F

WA
41

(Xho)

Xho

Scnl

Neo PGK

LR23
(2535)

(RV)

Nhe Nde

3'SOCS-1 arm

(BamHI)

βglobin

(Bam)

βgal

WA
41

M13R

(Bgl II)
(B)

PCR Product 2679

5'SOCS-1 arm

(Bgl II)
(B)

5' + 3' SOCS-1 arms in PBgal pA lox Neo

Figure 53